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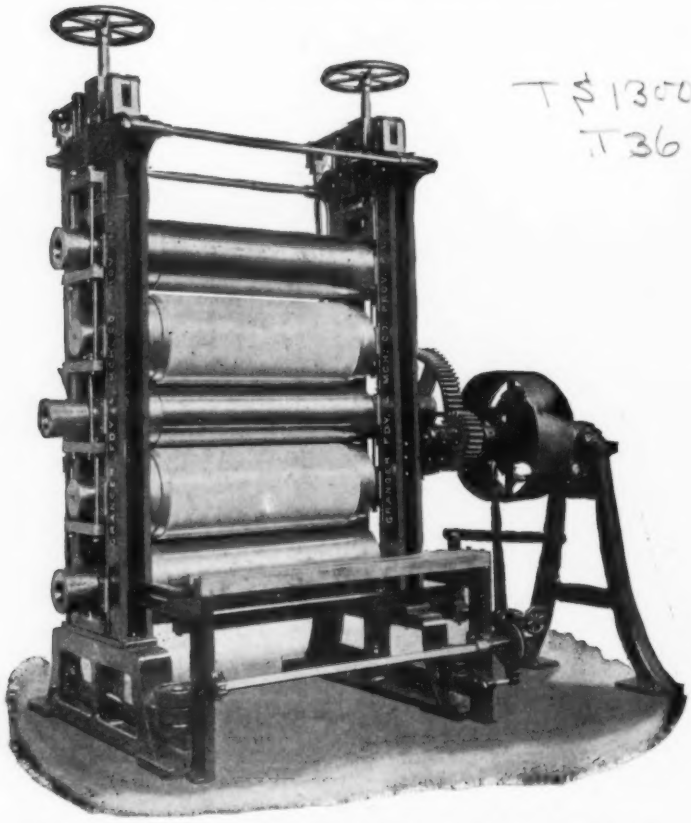

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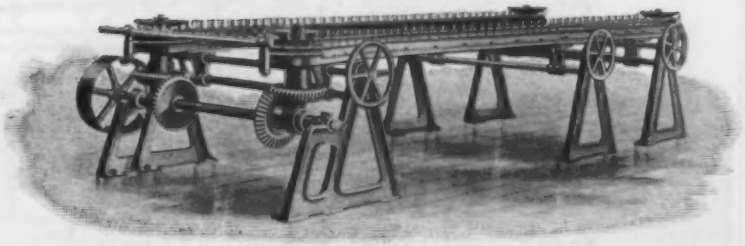

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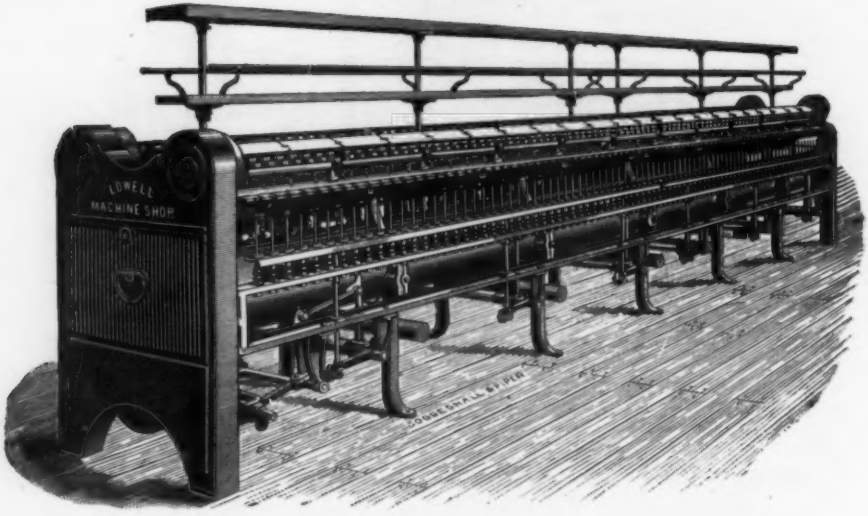

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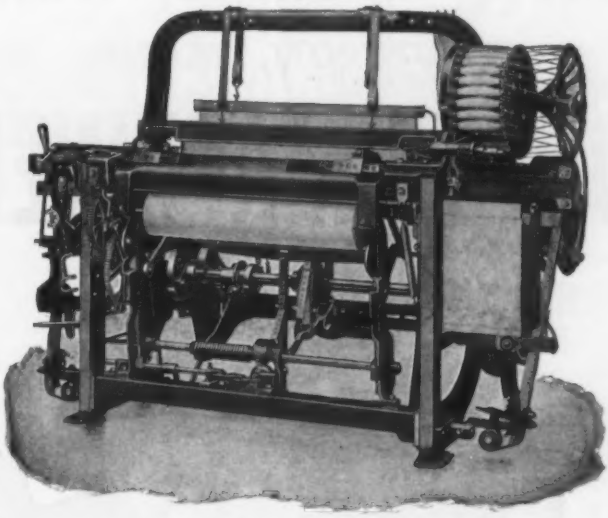

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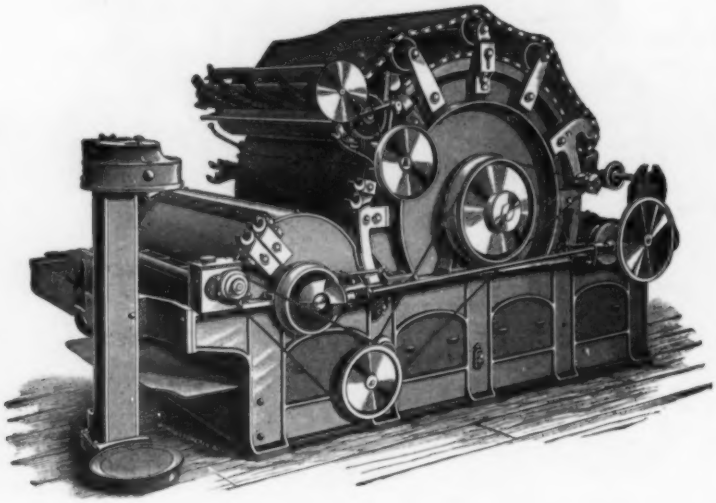

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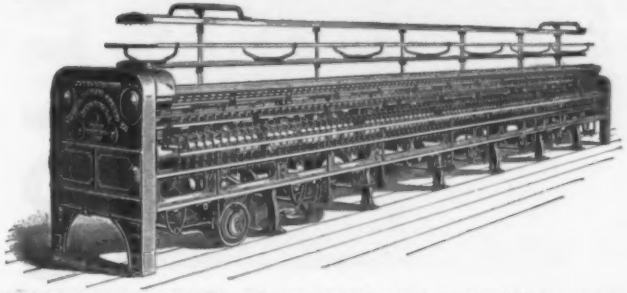

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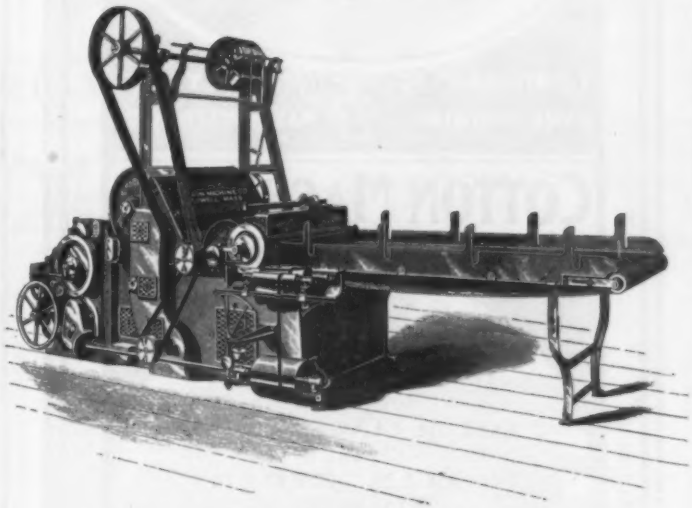

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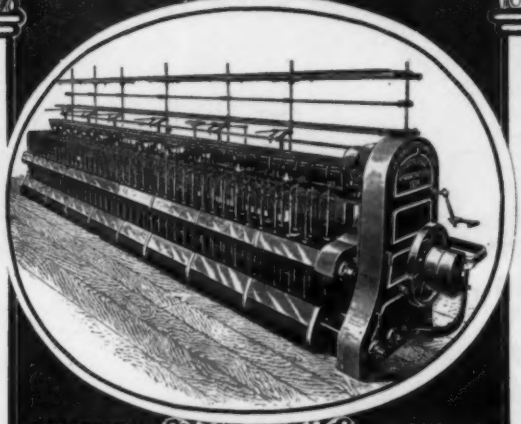

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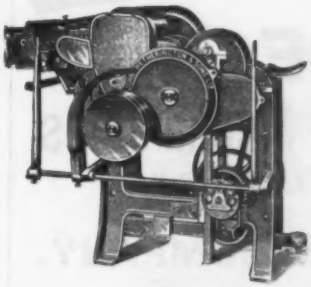

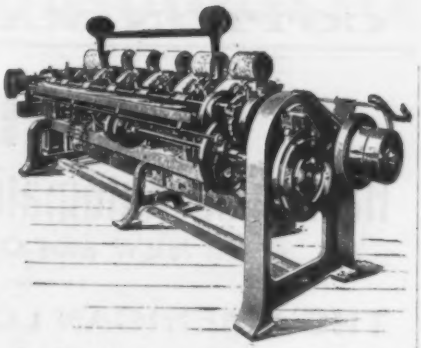

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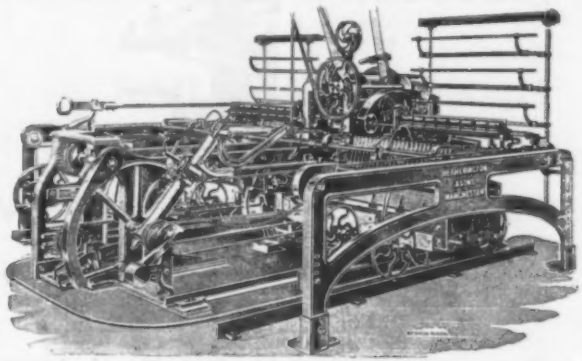

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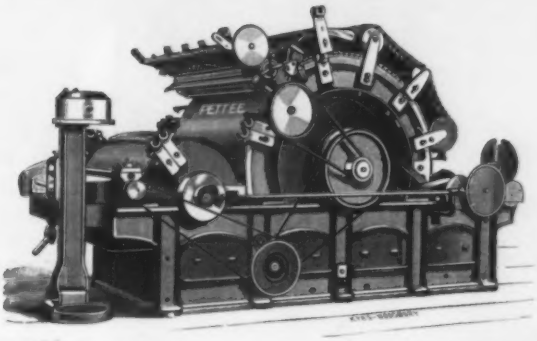

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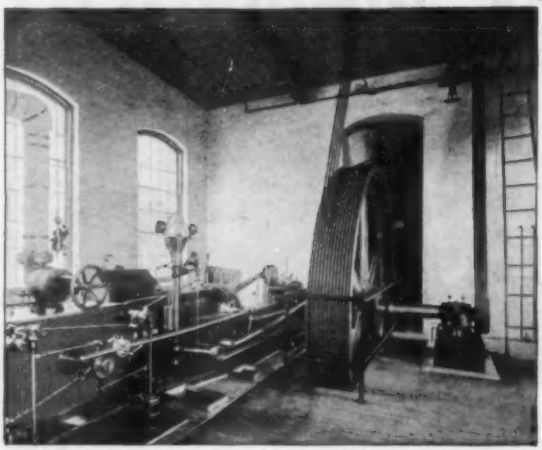

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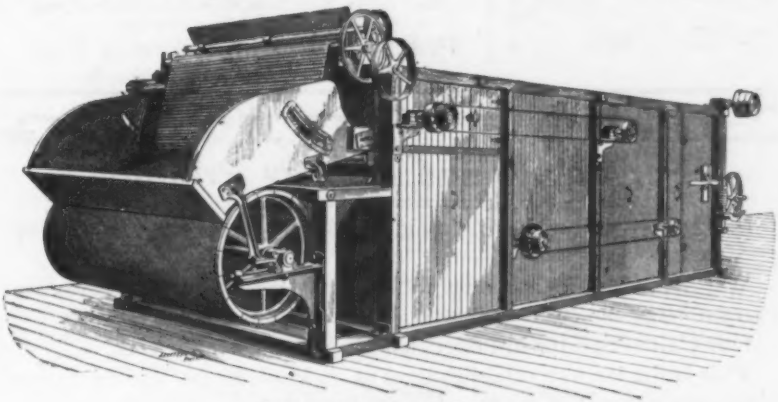
"CYCLONE" DRYERS

For WOOL, COTTON STOCK, YARN, UNDERWEAR, STOCKINGS. : :

Carbonizing Machines. Yarn Scourers.



Automatic Stock Dryer.

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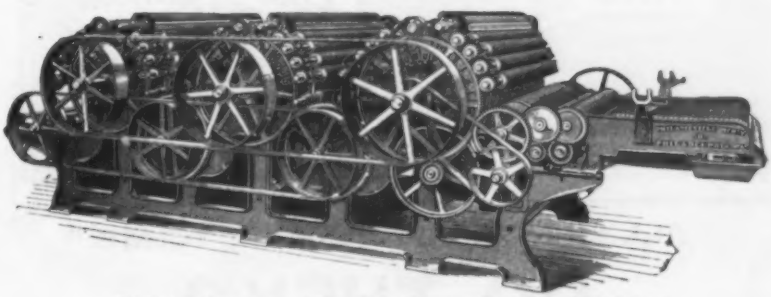
BREASTS, BURRING MACHINES, FEED ROLLS, LICKERS-IN. . . .



Proctor Improved Double Fancy Garnett Machine.

PHILADELPHIA TEXTILE MACHINERY CO.,

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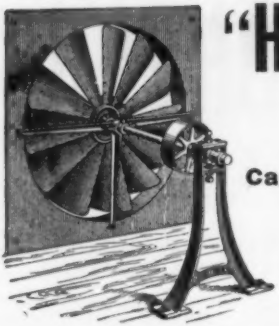
PHILADELPHIA, - - - PA.



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Carbonizers, Yarn Scouring Machines.

"HURRICANE" DRYERS

For Wool, Cotton, Hair, Yarn, Stockings, Underwear, etc.

Plans Estimates and Catalogues upon application.

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For Fabric and Hosiery Printing.

We Design and make Printing Blocks in type metal, wood, copper, steel, or any material.

We manufacture our own rock maple Rollers and Blocks, and carry a large and well seasoned stock on hand.

Our Calico Stamps are executed by Manchester experts.

This is the largest establishment of its kind in the United States. Estimates cheerfully given. Orders filled rapidly.

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THE LATEST AND BEST.

LOOMS, DOBBIES, HARNESS MOTIONS

BEAMING, SPOOLING, WINDING, DYEING AND SIZING MACHINERY.

POWER TRANSMITTING MACHINERY.
FREIGHT ELEVATORS, PATENT FRICTION CLUTCHES.

"ALL SHEAVES LOOK ALIKE TO ME."

DO THEY?

JUST ASK US ABOUT OUR

Machine-Moulded Sheaves.

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Postal Telegraph Building, Broadway and Murray Street, New York, U.S.A.

Midnight Fast Black

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OUR MACHINES PRINT TRADE MARKS

ON COTTONS, WOOLENS, CARPETS (Single and Double Widths.)

We lease and license our machines to measure and imprint the measurement upon fabrics, fold the same lengthwise and roll into merchantable packages all in one operation.

PAID UP LEASES ISSUED.

OSWALD LEVER,

Formerly LEVER & GRUNDY

BUILDERS OF

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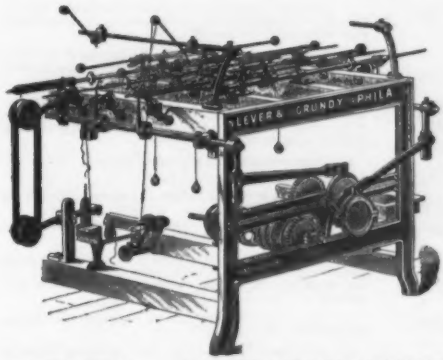

FILLING COP WINDING MACHINES. Spindles driven by belts or by gears. To wind cops. Cops to weave from the inside, or butts to weave from the outside. Can be made to wind any kind of filling from the coarsest to fine numbers. These machines will put the most yarn in as given size of shuttle than any other machine in use.

BANDLESS SPINDLE SPOOLING MACHINES. Adapted to the finer grades of yarn and to the finest silk.

PRESSER DRUM SPOOLING MACHINES. Arranged to spool in any way the trade requires.

BANDLESS VARIABLE SPEED MACHINES. To wind the large bobbins used in knitting mills.

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Beaming Machines, Sectional Warp Mills, Chenille Cutting Machines, Reeling Machines to prevent waste at the bottom of mule bobbins.

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NONE SO GOOD FOR THE PRICE.

NONE BETTER AT ANY PRICE.

ESTD. 1840

ALL SIZES FROM 1/4 TO 2" IN DIAMETER IN LENGTHS UP TO 3000 FT. IN STOCK.

TRANSMISSION ROPE

A PERFECT PIN TICKET

For Cloth Samples and Garments.

Easily and quickly applied to fabrics of any weight.
Securely attached and yet easily detached if necessary to remove.
The machine does the whole thing.
It is cheap, serviceable and durable.

We also make a machine which

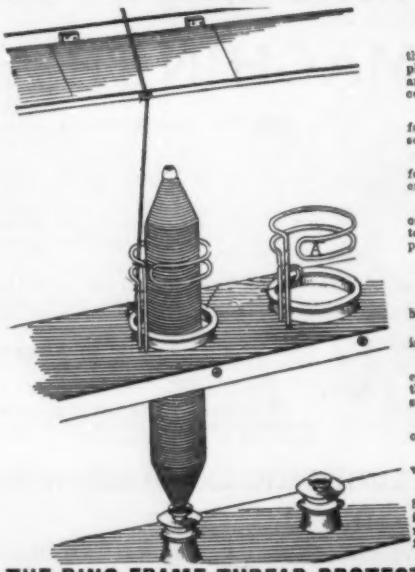
PRINTS the TICKETS as they are attached if desired.

Send for particulars to

SARANAC ELECTRICAL MFG CO.,

ST. JOSEPH, MICH.

New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse,

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

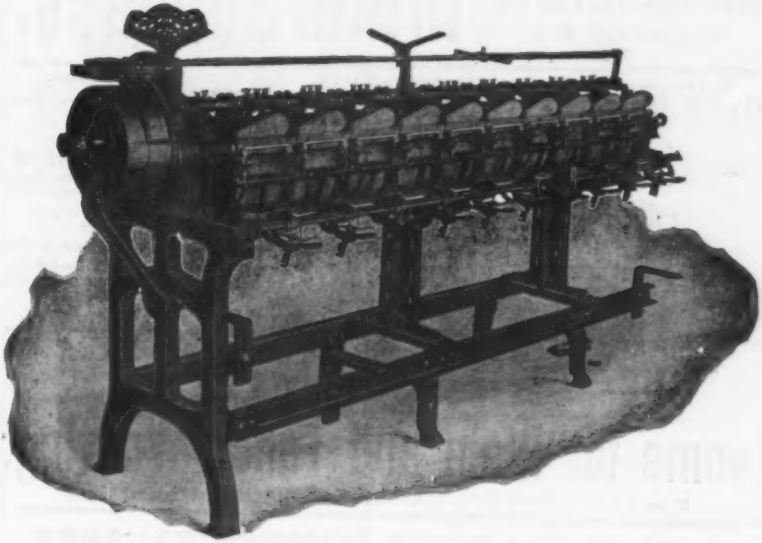
11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

THE RING FRAME THREAD PROTECTOR CO., - Amsterdam, N. Y.

Foster Machine Co.,

WESTFIELD, MASS.



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Patented in United States and Europe.

.. .. The New Winder. .. ..

This Cone Winder is the fastest running Winder in the market. Gives the greatest production and makes the best shaped Cones in the World.

No Oil or Dirt Can Get on the Yarn.

Has independent drive for rolls.

Even tension and speed. Less power to run.

Stop Motion acts when a thread breaks or runs out.

Before You Purchase

Any Cone Winders please allow us to refer you to some of our best and most reliable people, and send you descriptive circulars.

ANYTHING in Mill Supplies.

Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

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PROVIDENCE, R. I.

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Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

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FELTON'S CYLINDER COMBER BRUSHES,

Made with

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The Patent Fibre Brush is a very satisfactory brush, but the one with Bristle Stock is the longest wearing and best.

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Successor to E. A. Leigh & Company,

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Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick fine stitch or coarse stitch.

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Double Ribbed Rings, U.S.
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Metallic Burnish Like
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SPINNING AND TWISTING TRAVELERS

OF EVERY DESCRIPTION.

PROVIDENCE, - - R. I.

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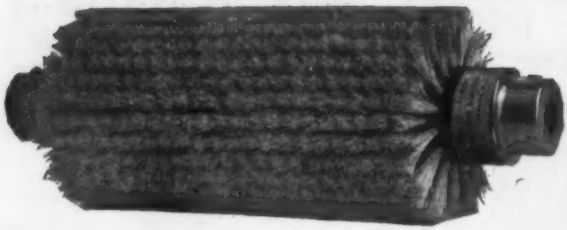

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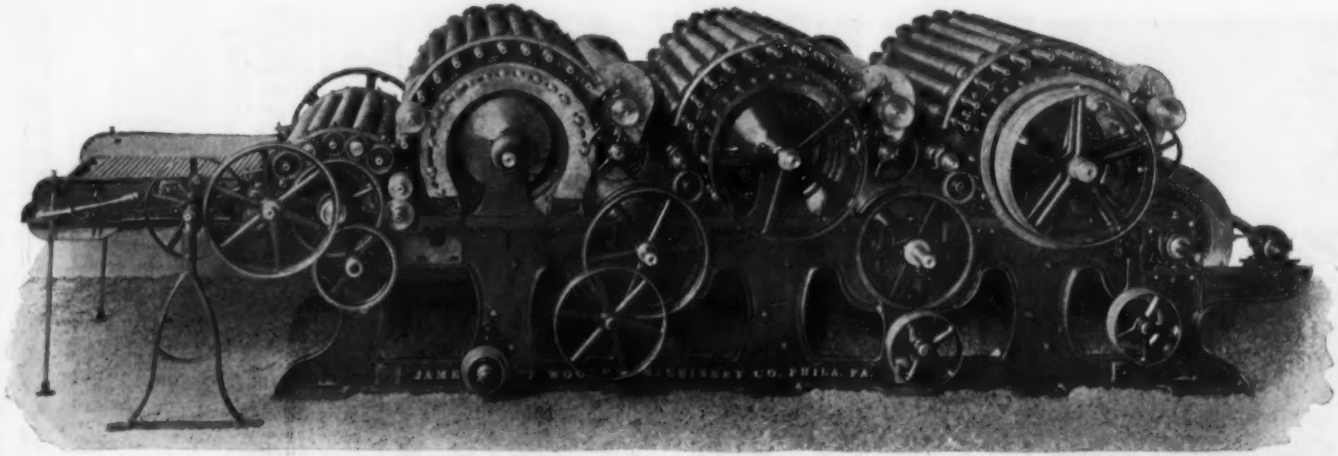

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Metallic Breasts of Every Description. New Improved Garnett Pickers, Re-clothing of Every Character of Metallic Work, Feed Rolls, Licker-in and Burring Machines.

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For opening Fine Botany Worsted Thread Waste, Fine Cotton Cop Yarns, Re-working Hosiery Clips and Waste and Shoddy Work in general.

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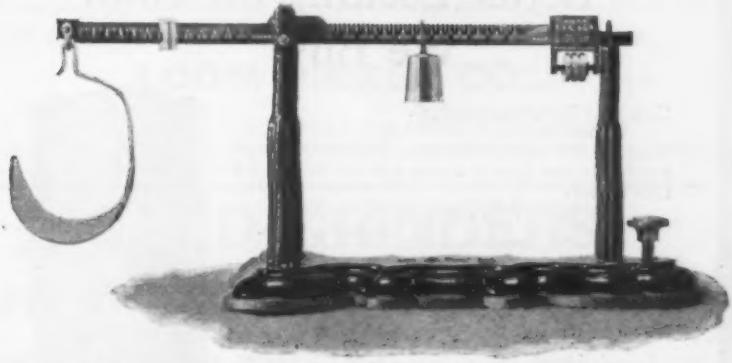
That will weigh by HALF GRAINS up to 1,000 GRAINS (over 2 1-4 oz.)



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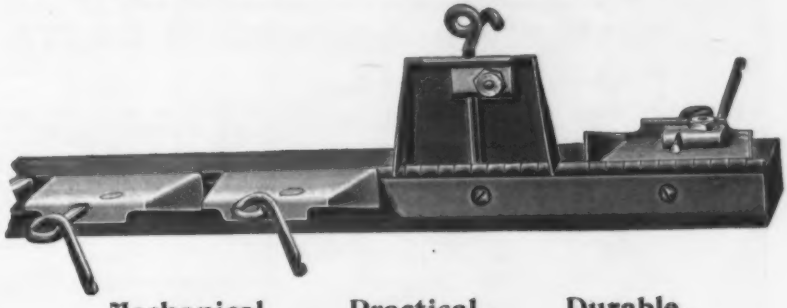

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Largest Manufacturers of Oil Filters in the World.

We also make The Burt Exhaust Head.

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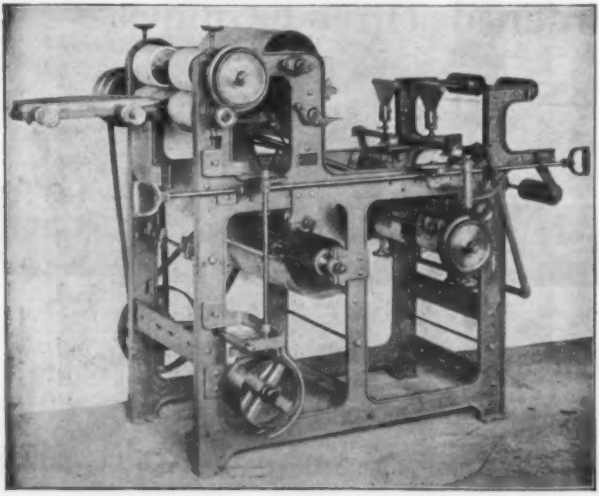

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Revolving brushes clean fabric before and after singeing.
Impossible to burn the web while getting machine in motion or stopping it.
Burners always give a clean, blue flame.
No air compressor or blower needed.
Large production and best results.
Also singeing machines for all kinds and widths of goods, from yarns to piece goods 72 inch wide.
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REPAIRS PROMPTLY ATTENDED TO.

Write for information and prices.

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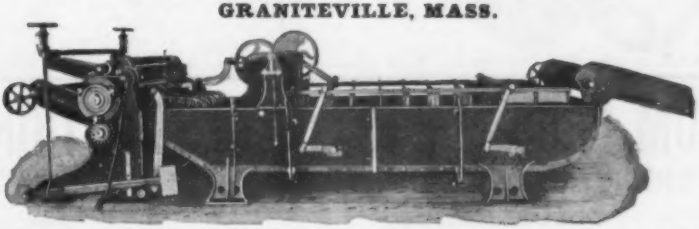

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SUCCESSORS TO **ATLAS MFG. CO.**

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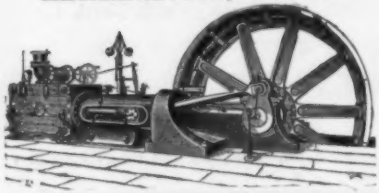

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Controls night Watchman.
No chance for him to sleep.
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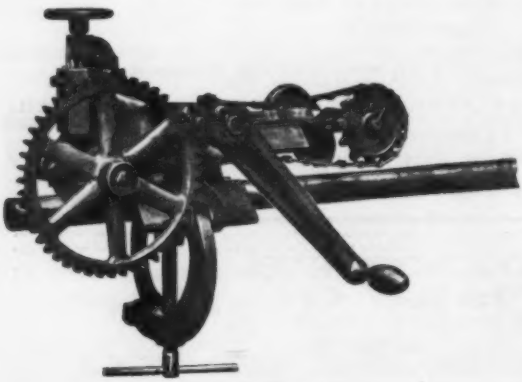
NOTE:—Our Portable Key Seater will enable you to cut your Key Seats on any size shafting during the noon hour, and without removing the shafting from the hangers.



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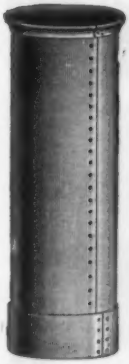

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BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation: Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one half pound per inch diameter. SIZE—All cans to an exact size, perfectly round and true. DURABILITY—Superior to any other can.

ALSO MANUFACTURERS OF HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

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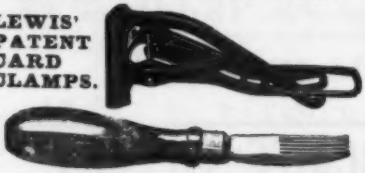

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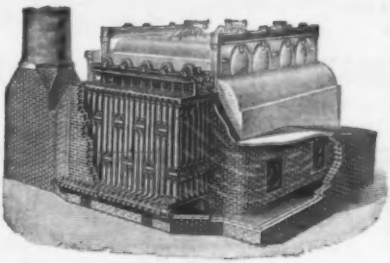

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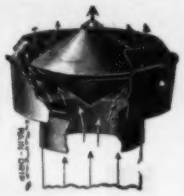

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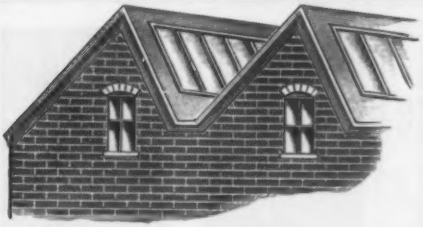

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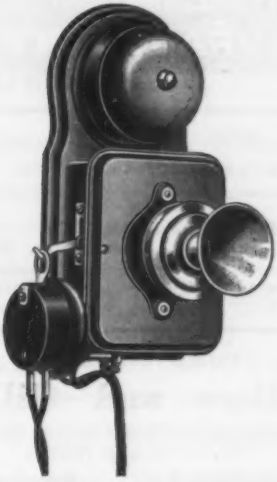

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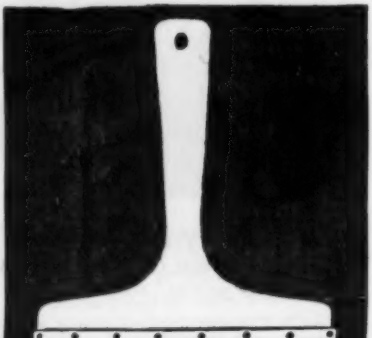

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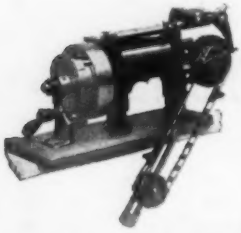

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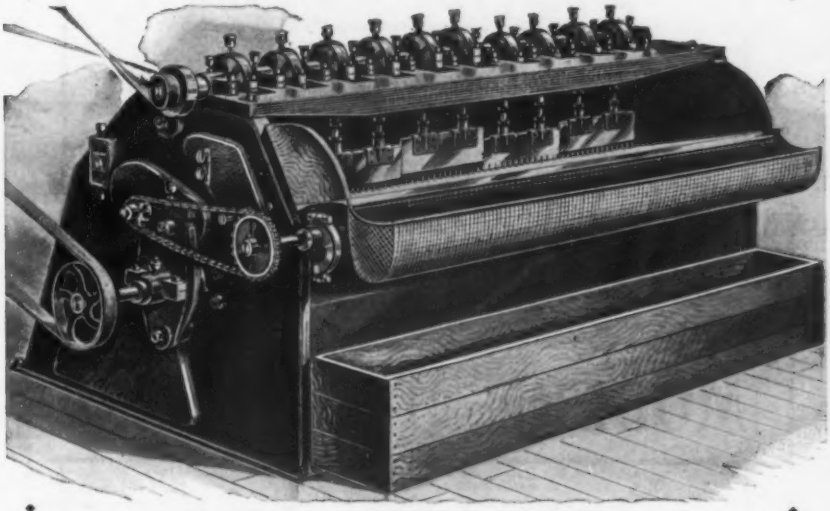

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Card-clothing. 677,112. Edwin Brown, Worcester, Mass., assignor to American Card Clothing Company, same place.

Chenille Fabric, Woven. 675,734. Thomas Hirst, Vineland, N. J.

Combing Machines. Idler Pulley for Wool. 676,046. Francis W. Nims, Worcester, Mass., assignor to himself, Alfred Thomas and Wm. Richardson, same place.

Dyeing Apparatus. 676,151. Eugene E. Plantron, Oissel, France.

Dyeing, etc. Machine for. 676,222. Charles E. Drew, Philadelphia, Pa., assignor of one-half to the Friedberger Manufacturing Co. of Pennsylvania.

Fabric. 675,831, 675,832. Charles Green, Uxbridge, Mass., assignor to Albert C. Warren, Newton, and George L. Stevens, Boston, Mass.

Fireproofing and Preserving Fabrics, etc. 675,901. Alwin Nieske, Dresden, Germany.

Knitting Machine. 675,663. William K. Millholland and Ulysses G. Lee, Chicago, Ill., assignors to the George D. Whitcomb Company, same place.

Knitting Machine. 675,794. George E. Rutledge and Ulysses G. Lee, Chicago., Ill., assignors to the George D. Whitcomb Company, same place.

Knitting Machine, Rib. 676,372. Robert W. Scott, Philadelphia, Pa., assignor of one-half to Louis P. D. Williams, Ashbourne, Pa.

Loom Picker-Stick Buffer. 676,658. Francis A. Mills, Methuen, Mass., assignor of one-half to Grosvenor B. Emmons, same place.

Loom-Shuttle Checking and Releasing Mechanism. 676,491. William T. Fairburn and John Hargreaves, Fall River, Mass.

Loom Picker-Check. 675,717. Oscar Chandronnait, Lippitt, R. I.

Loom-Shuttle. 675,810. John C. Bryan, Augusta, Ga.

Loom Warp Stop-Motion. 675,682. Wallace I. Stimpson, Medford, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass.

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Loom-Stopping Device. 676,988. August Lanster, Paterson, N. J.

Loom Thread-Parting Mechanism. 677,096, 677,097, 677,098. James H. Northrop, Tustin, Cal., assignor to Draper Company, Portland, Me., and Hopedale, Mass.

Looms, Cop-Winding Mechanism for Ribbon. 676,875. Nicholas Chaize and Jacques Chaize, St. Etienne, France.

Measuring Device, Cloth. 675,759. George W. Specht, Allegheny, Pa., assignor of one-half to George J. J. Hoelsche, same place.

Ornamental Fabric. 676,657. John Macadam, Chester, Pa., assignor to the Eddystone Manufacturing Company, Eddystone, Pa.

Oxidizing Apparatus. 676,647. Alexander N. Dubois, Philadelphia, Pa.

Sacking Device. 675,481. Christian F. Jacobson and Andrew C. Jacobson, Berkeley, Cal.

Spinning and Doubling Machinery. 675,396. George H. Milward, Nottingham, England.

Spinning-Machine Stop-Motion. 675,476 Fred Haggas, Sr., Providence, R. I.

Spindle. 677,154. Victor Belanger, Marshfield, Mass.

Spinning and Twisting Machine Spindle-Holder. 675,934. Joseph W. Collins, Pawtucket, R. I.

Spinning Apparatus. 676,087. George O. Draper, Hopedale, Mass., assignor to Draper Company, same place and Portland, Me.

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Spinning Apparatus, Yarn. 676,839. George O. Draper, Hopedale, Mass., assignor to the Draper Company, same place and Portland, Me.

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Twisting-Machine, Belt-Driven. 676,057. Joseph E. Tynan, Paterson, N. J.

Twisting-Machines. Stop Motion for Belt-Driven. 676,056. Joseph E. Tynan, Paterson, N. J.

Wool. Apparatus for Extracting Fat from. 675,407. Georges Peltzer, Verviers, Belgium.

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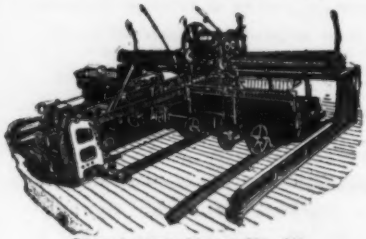

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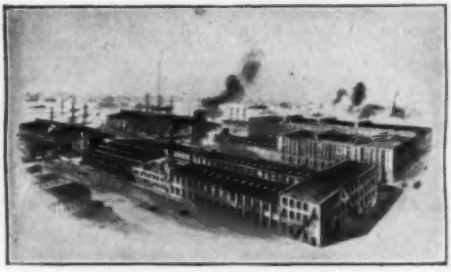

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SECOND EDITION—AUGMENTED

GEORGE ALBERT FRISBIE.

TEXTILE WORLD.

Vol. XXI. JULY, 1901. No. 1.

GEORGE ALBERT FRISBIE.

The subject of this sketch was born at Camden, N. Y., November 14, 1872. He is the son of Willard J. and Emma Phelps Frisbie, both life-long residents of Camden. His father, one of the best financiers in the knit goods business, received the foundation for his business career in a local bank, where he filled all positions open. In 1870, he formed a copartnership with Mr. William H. Stansfield in the dry goods business, continuing in that till 1879, when they began the manufacture of knit goods and knitted specialties under the firm name of Frisbie & Stansfield. Later they conducted a hosiery and yarn business at Camden in connection with their other mills; The Manhattan Knitting Co., of Jersey City, N. J.; the Rochester Hosiery Co., at Rochester, N. Y.; the Syracuse Knitting Co., at Syracuse, N. Y.; and, with Mr. Chas. F. Kendall, a yarn mill known as C. F. Kendall & Co. at Camden, N. Y.

In 1891 they admitted Mr. Kendall into the business and merged all the above mills into one at Camden, under a co-partnership, known as the Camden Knitting Co.; this mill is still running to its fullest capacity. At this time they began the manufacture of jersey ribbed underwear, which was then new and comparatively little known. The goods met with a ready sale and the business grew to such proportions that they were obliged to enlarge their output, and in 1893, being unable to secure the necessary help at Camden, they established a mill at Syracuse, N. Y., known as the Clinton Knitting Co.; Mr. Stansfield located at that place to manage the mill.

After having completed his studies at the Camden high school, Mr. Frisbie, the subject of this sketch, entered Colgate Academy at Hamilton, N. Y., in September, 1887, and graduated from there with honors in June, 1891. He entered Colgate University at the same place in the following fall, but, being anxious to get into business, left the following winter and accepted a position with a dry goods house in his native town. Mr. Stansfield having gone to Syracuse, leaving open the opportunity which Mr. Frisbie desired for learning the knit goods business, in January, 1893, he entered the office of the Camden Knitting Co., to learn the office and financial end of the business under the direction of his father. He remained there in that capacity till January, 1896.

At that time, the sales had again outgrown their capacity, and another mill was established at Utica, N. Y., named the Kendall Knitting Co., in honor of Mr. Chas. F. Kendall. Mr. Frisbie was selected for the office of treasurer of the new company and still retains that position. The company has been successful in building up a large trade and its capacity is today nearly three times what it was at the start.

In August, 1899, Mr. Frisbie recognized the value of a machine for producing a fleece lining on a ribbed fabric. He shortly after organized a stock company and incorporated it as the Regal Textile Co., at Utica, N. Y., for the manufacture of ladies' un-

derwear made from this fabric. They procured the sole right in the United States to the use of these machines and the goods have been a success from the start, their sales and product constantly increasing. Mr. Frisbie, as treasurer, manages the finances of the company.

These four mills named above are practically under one management, each making a different grade of goods. Their capacity for the manufacture of ribbed underwear is said to be larger than that of any other single firm in the world. They confine their output exclusively to ladies' goods and sell only the jobbing trade, numbering among their customers the best houses in the business. Their goods go to all parts of the United States and they have a constantly increasing foreign trade.

In the fall of 1900, Mr. Frisbie was instrumental in establishing the Oneida Hosiery Co. at Oneida, N. Y. They make all grades of cotton hose for men, women and children and are already operating the largest hosiery mill in New York State. Mr. Frisbie is treasurer of this company and manages the office and financial interests of the company in addition to his other duties.

October 14, 1896, he married Miss Alice Owen, at Camden, N. Y. They have one child, a son, Owen Phelps Frisbie, born at Utica, N. Y., October 21, 1897.

—Our exports of manufactured cotton in May were at the rate of nearly $250,000,000 a year. The largest value of goods exported in any one year was $233,000,000, so that the exports for May were at high water mark. The imports of manufactured cotton in the same month show a small but nevertheless gratifying decrease distributed very evenly among the various classes of goods. Lace goods show the largest percentage of decrease.

—Music is the most disagreeable and the most delightful of sounds.—Gautier.

THE TEXTILE WORLD'S 1901 DIRECTORY.

The Textile World's 1901 Official Directory of Textile Mills and Yarn Trade Index has been published, and it is now being distributed to those entitled to receive it.

Besides the usual careful revision, which means that several hundred new mills have been added and many thousand changes made in the reports, there are a number of new features which we believe will commend themselves to its users.

The most important of these is the Yarn Trade Index and Classified Directory. The publishers have been in such frequent receipt of inquiries from the knitting and weaving trade that it seemed as if a classified index of yarn spinners, arranged according to the kind of yarn made, would supply a want which has not been previously filled by any other directory. A separate list of yarn dealers and yarn commission agents is also added.

Another feature is the classified list of mills doing commission and order work, arranged according to the different kinds of work done.

There is a separate list of shoddy manufacturers, never before compiled, and a very extended classified list of dyeing, bleaching and finishing establishments doing all classes of work, arranged according to the kind of work done, and a separate list of mills with worsted machinery is contained in this year's Directory.

The tables for manufacturers' use have been somewhat extended, and the usual lists of manufacturers' selling agents, manufacturing clothiers, suit and cloak makers, and cotton, woolen and rag dealers have been carefully revised to date.

The book contains 456 pages and 22 maps. We believe its system of arrangement is, beyond question, the most convenient for use. One does not have to hunt all over the book to find what he wants. The Directory is crossed indexed, so that a mill may be found either by turning to the

town in which it is located, or in Alphabetical Directory. The flexible covered edition has been made slightly smaller in dimensions, so as to be more convenient for travelers' use, while the office edition is handsomely bound and is somewhat larger than before. The price of the former is $2, the latter $2.50, or in combination with the Textile World, $3.00 and $3.50 respectively for one year.

THE KNITTING INDUSTRY.

In common with other branches of textile manufacturing, the knitting industry during the past year shows a marked increase in the knitting machinery installed, amounting to 7234 machines, an increase of 9½ per cent. Of this large increase 46 7/10 per cent., or nearly one-half was made in the four middle states of New York, New Jersey, Pennsylvania and Delaware. New York claims 813 new machines, or 11 2/10 per cent., and Pennsylvania appears with 1718 machines, or 23 8/10 per cent. of the total increase. The increase of knitting machines in the Southern States accounts for 2850 machines, or 39 4/10 per cent. of the total. 655 machines (9 1/10 per cent.) were installed in the Eastern States, and in the West there were 348 new machines started, or 4 8/10 per cent. of the total increase. Thus all but 13 9/10 per cent. of the increase was in the mills of the Middle and Southern States.

The large increase in the Southern States is the more noteworthy because of the comparatively small number of knitting machines in that section (6706) one year ago. This growth in the South, as is well known, is due to the industrial awakening of that section where the people have but recently awakened to the wealth producing capacity of their people in industries that have formerly been centred in the northern and eastern states.

The share of the Middle States in the increase is due naturally to the previous construction of the business in this section, resulting in the concentration of a vast number of skilled operatives in that section. Over 55 per cent. of the knitting machines in the entire country are today in the four Middle States already mentioned. Thus we find the year's growth to indicate that the great bulk of the new knitting mills are being built either in the Southern or Middle States.

We think, however, it will be found that the rosy anticipations of quick and easy profits indulged in by the builders of Southern knitting mills have not been fulfilled. The depression in the business due to the large increase of productive capacity without a corresponding increase of consumption has doubtless subjected new Southern mills to a very severe test in which the calculated advantages have failed to compensate for reduction in the selling price of the goods.

There is to be sure a large supply of unemployed people there, but from reports we get, some of the new knitting mills in the South have found it very hard to secure enough help to run their machines. This results in a small average of production.

Then there have been a great many knitting mills built in the South on too small a scale. Each one of these required a complete organization of the general staff, and the fixed charges have proved much heavier than in the large northern mills. Many of these small mills are too small to have their own dye houses and have been handicapped by the delay and increased expense of having their coloring done at distant points.

The condition that confronts the small knitting mill is well illustrated by the following statement furnished by one of these concerns as to the cost and selling price of their 176 needle half hose:

1¼ lbs. Eastern carded 14s, at 16½c...	.206
Dyeing and Freight (Black)	.080
Paper boxes	.020
Wood and Oil	.013

Supplies	.005
Topping	.025
Knitting and transferring	.036
Looping	.035
Mending and inspecting	.020
Finishing	.040
Fixed charges	.060
Total	.540

This cost was figured on a theoretical production of 225 dozen per day, which was never reached, consequently, the actual cost for fixed charges was far in excess of the amount allowed for this item. After discounts and selling expenses were deducted, these goods netted the mill 52 7/10 cents, showing a loss of 1 3/10 cents per dozen.

In all branches of industry the tendency is towards concentration of operations in large concerns. The overproduction of goods and consequent reduction of profits put success in manufacturing enterprises out of the question unless the cost of manufacturing is as low as the lowest, and the workmanship as high as the highest in the market.

THE TARIFF.

The agitation, recently begun, for a change of the tariff, is a reminder that this question is always with us. Since the foundation of the government the tariff question has been a living issue. When the rates were high one political party struggled to lower them; and when they were low, the other party fought to raise them. The advantage, however, has been on the side of the high tariff party for the greater part of the time, and (with the exception of three years) a high tariff has been in force for the past forty years, and has been accompanied by a growth in national wealth unequaled in the history of mankind. The brief trial of low tariff between 1894 and 1897 was accompanied by hard times and panics. Putting aside mere argument, therefore, and judging the question in the light of its own experience, the present generation must conclude that a high tariff is a good thing, and a low tariff a bad thing for this country. Public sentiment is not controlled wholly by the teachings of experience, however, and as a consequence we find that, in spite of the disaster which accompanied the Wilson bill, one great political party supported by nearly one-half the voters is still pledged to a low tariff, while the other party is identified with a high tariff policy.

—There is one point, however, upon which popular sentiment is well nigh unanimous, and that is the injurious effects of agitation and uncertainty. The protectionist freely admits it is worse than free trade, and the free trader agrees that it is worse than protection. The present agitation has been started by associations purporting to speak in behalf of business men for whose interests the present tariff law was framed. The great mass of business men desire no change, and least of all do they desire agitation. Probably at no time in the history of the United States was so much agitation of this question compressed into a like period as between the Cleveland free wool message in 1887 and the election of McKinley in 1896. During these nine years the country was kept in a turmoil over tariff rates. Enterprise was checked; business was demoralized; working people were idle; despair was on every hand. The discussion of the tariff did not settle anything. A tariff discussion never does. Taught in the hard school of experience toward the end of these nine years a strong sentiment arose against further agitation. The most rabid protectionist was ready to accept free trade in preference to uncertainty, and the tariff reformer was willing to live under high tariff if it was only permanent.

—As usual the textile industry which has always suffered most from tariff agitation and tariff changes occupies a prominent part in the present discussion, and in the woolen business the agitators profess to find the chief reasons for demanding a change of rates. They state that the high price of wool due to the Dingley

law is forcing the consumer to clothe himself in cotton and shoddy. They assert that the fabrics offered for sale contain a larger proportion of these materials than ever before, and that the American manufacturer has been compelled on account of the high cost of wool to perfect his machinery and method of manipulating shoddy and cotton so that he now performs wonders in making cotton and shoddy masquerade as "all wool." These statements are generally accompanied by reference to this or that authority who has figured out from the statistics of wool and woolen exports and imports that the consumption of wool is rapidly decreasing. This line of argument is usually convincing, because few take the trouble to investigate for themselves, and the idea is being rapidly instilled into the minds of the masses that the Dingley law is covering the backs of the American people with cotton and shoddy.

—What are the facts? First, as to the cost of wool. Instead of being higher wool is much cheaper now than it was before the passing of the Wilson bill. It is today nearly as low as when that law gave us free wool. Fine medium territory is today quoted at 38 cents scoured. Under the Wilson bill this grade varied in price from 28 to 36 cents. Where then is the increased temptation to use substitutes? We now come to the assertion that our manufacturers have become more skilled in the working of cotton and shoddy. If this is the case it is because they have adopted English methods of working such materials, for it is in England where wool is "free" that the highest development has been reached in the art of making cloth from shoddy and cotton. It is, however, the judgment of experienced manufacturers that no greater percentage of cotton and shoddy is or can be worked into American fabrics at the present time than was the case in past years. We have before us as we write these lines a sample of men's wear cloth, made in this country in 1870, which contains as large a percentage of cotton and shoddy and shows as much skill in manipulation of these materials as any fabric to be found on the market today. The aim always has been to produce cloth at the lowest possible cost, and for this purpose manufacturers in all countries and at all times have used all the cotton and shoddy possible in the manufacture of cloth, and no material improvement has been made during recent years in the machinery and processes for handling these wool substitutes.

—We come now to the statement that the quantity of wool consumed is much less now than formerly. This is an assertion which is easily made, but which is impossible to either prove or disprove. There are no statistics as to the use of cotton and wool under different tariff laws, and the attempt to prove by means of a juggling with statistics of wool and woolen exports for single years that less wool is now being consumed, is so manifestly misleading as to deserve no consideration. During the three years under the Wilson bill there was imported into the United States over 82,000,000 lbs. of shoddy, noils, and similar wool substitutes, while for the three previous years there was imported but 700,000 lbs. and for the three following years but 4,000,000 lbs. of this material. Does this prove that the American people are using more shoddy under the McKinley and Dingley bills than under the Wilson bill?

—But let us grant that a decrease in the quantity of wool consumed has actually occurred. What is the most reasonable explanation of such a phenomenon? During the hard times that accompanied the Wilson tariff law the people were forced to wear cheap clothing because they could not earn money with which to pay for better goods. The result was a demand for cheap eight and ten dollar suits. During those hard times the consumer became educated to the use of cheap

low priced clothing, and now he still insists upon having the same kind of goods. He could not pay more under the Wilson law and he will not pay more now. These are facts known to every one in the trade and if more shoddy is now being used the chief cause will be found right here.

—We desire to call recent experiences with tariff tinkering to the attention of those who are now resuming the tariff agitation. We expect to be greeted with the answer that there is no intention of making radical changes, that they simply desire to revise the rates and remove inequalities. This, however, is not the way a tariff law is changed. It is seldom revised. Usually it is wiped out and a new law takes its place. It is this result which is invited by an attempt to change the Dingley law. The whole question will be opened up and become the football of politicians. Once under a good headway no one can tell where the agitation will end. The well meaning business men who gather together at the annual meetings of their associations are playing with fire when they pass resolutions and make speeches in favor of changing the present tariff. We believe that, at the same time, they misrepresent the vast mass of business men. The country is prosperous. Let the tariff alone.

THE NATIONAL ASSOCIATION OF MANUFACTURERS.

At the recent annual meeting of this association, held in Detroit, there was a pronounced sentiment in favor of a revision of the tariff on imports into the United States. This sentiment was expressed not only in the speeches but in the following resolutions adopted at this meeting:

"Whereas, recent events have brought forward the question of tariff revision; and

"Whereas, the subject is one of vital interest to the members of this association and intimately connected with the most important purpose of this association, to facilitate the expansion of American trade and commerce at home and abroad; therefore,

"Resolved, That the National Association of Manufacturers affirm that the following principles should govern all legislation:

"First. That the object of tariff legislation should be to furnish adequate protection to such products only as require it, without providing opportunity for monopoly abuses, and

"Second, That tariff on goods whose cost of production is higher in the United States than foreign countries, should be at least what is necessary to compensate domestic industries for higher cost of production."

It is a matter of deep significance that a call for tariff revision should come from a gathering of representative manufacturers. These men are not importers, politicians or theorists, but level-headed, practical business men, manufacturers, who have in the past asked for protection by tariffs that they might retain the home market for their products and the American level for the wages of their workmen. Most of them are men who have managed extensive business interests during a period of tariff agitation, and who realize that an attempt to revise the tariff in this land of popular government generally results in tariff reorganization.

For these reasons the action taken at Detroit deserves more than a passing notice. It indicates a movement toward tariff revision, originating among the men who have in the past begged that agitation cease and their business be left to adjust itself to stable conditions of either high or low tariff schedules. President Search in his opening address strongly approved of the reciprocity treaties negotiated by the present administration, and which the Senate has declined to ratify. He reviewed the history of the difficulty between Russia and the United States regarding the tariff on sugar, spoke in favor of a government department of commerce and industries and advocated the cultivation of more friendly relations between employer and employee. On this latter subject he said:

"The increasing recognition of the fact that employers have some obligations toward their operatives other than the

mere payment of wages is one of the very encouraging signs of the times, and if it shall be possible for this association to do anything to improve relations existing between employers and employed it certainly will have fulfilled a useful purpose."

COTTON YARN FOR CHINA.

China imports large quantities of cotton yarn principally from India and Japan, but none at all from the United States. Large stocks of American yarn remain unsold today, although offered below cost. Many Southern mills which have flooded the domestic market with coarse yarns were built with the idea that a foreign market would be ready to absorb the surplus products of American cotton mills. If a foreign market for our cotton yarn mills is ever to materialize, certainly now is a favorable time to begin the work, when these yarns are offered for less than cost.

—The changes in the cotton yarn import trade of China during the past fourteen years carry some valuable suggestions as to our prospects of selling in that market. Of the 79,000,000 lbs. of cotton yarn brought into China in 1887 about one half came from England and the other half from India. The average price of this yarn per pound was 18 7/10 cents. Since that time the Chinese imports of the cheap Indian and Japanese yarn have increased enormously, while the imports of English yarns have decreased in even greater proportion. This is plainly seen by comparing the figures for 1887 with those for 1897, or 10 years later. In the last named year the quantity of cotton yarn purchased by China had increased to 209,420,000 lbs., showing a gain of one hundred and sixty-five per cent. in the decade while the average price per pound had sunk to 11 8/10 cents, a decline of about 37 per cent. during the same period.

—A comparison of the part played in this increase by each country shows plainly how effectively the low priced Indian and Japanese yarns drove the English yarns out of this market. As already stated the comparatively small quantity of yarn imported into China in 1887 was divided equally between England and India. In 1897, however, under the pressure of cheap Japanese and Indian yarn, England's share of this trade had sunk to the insignificant amount of 6,840,000 lbs., being 3¾ per cent. of the total amount or less than one eleventh of the quantity furnished in 1887, while India's share had bounded up to 164,738,000 lbs., or 77½ per cent. of the total, and Japan, a newcomer on the scene, was shipping yarn to China at the rate of 34,840,000 lbs. yearly. This change in the currents of trade can be ascribed entirely to the low prices of Indian and Japanese yarns manufactured from cheap cotton by the cheapest cotton mill labor in the world. The average values per pound of the yarn shipped into China in 1897 from the different countries were as follows: from England, 13 4/10 cents; from Japan, 12 2/10 cents; from India, 11 6/10 cents. Here we find a good illustration of the principle that victory in trade contests rests with the lowest prices. If America is to capture this Chinese market for cotton yarns she must be prepared to undersell competitors who have driver England out of the business.

—The political disturbances in China have interrupted and interfered with this trade since 1897, but now that order is restored and the open door kept open, China will doubtless resume her purchase of cotton yarn in even increased volume, and the market is as free to Americans as to Indians and Japanese. The prices are not encouraging to American enterprise; the high priced labor of the United States will meet in that market the competition of the Asiatic laborer working for 5 to 20 cents per day. There is no way of bringing their standard of prices up to ours. Can our Southern mills find a foothold in that market? While the prospect of it is not encouraging, nothing can be gained by disguising the facts.

The Textile Machinery in the United States.

By a comparison of the statistics of the textile machinery in the United States, compiled from the Textile World's Directory for 1901 with the figures for 1900, we find that an increase has occurred in each of the four great branches of the industry, cotton, woolen, knitting and silk during the past year. In the cotton branch the looms show a slightly smaller percentage of increase than do the spindles, being 7 per cent. for the former, and 7 5/10 per cent. for the latter. There are 1,578,049 more cotton spindles reported for the whole country in 1901 than in 1900. Over 61 per cent. of these new spindles are located in the South. The balance, with the exception of 1 4/10 per cent. in the Western States, are located in the Middle and Eastern States.

Compared with this increase for the whole country the percentage of increase in the looms and spindles of the South is all the more noteworthy. We find that during the past year there has been installed in the Southern States 965,166 cotton spindles and 18,375 cotton looms, or an increase of 16 7/10 per cent. in the cotton spindles of that section as compared with 7½ per cent. increase for the whole country. This shows how cotton spinning mills have sprung up in the South, flooding the market with coarse yarns and bringing about the extreme depression now existing in

COMPARISON OF TEXTILE MACHINERY IN 1901 WITH 1900.

	1900.	1901.	Increase.	Per Cent. of Increase.
Cotton Spindles	21,022,983	22,601,072	1,578,089	7.5
Cotton Looms	488,398	522 482	34,084	7.0
Woolen Sets of Cards	7,201	7,414	213	3.
Worsted Combs	1,456	1,492	36	2.5
Woolen and Worsted Looms	82,999	87,904	4,905	5.9
Knitting Machines	75,721	82,955	7,234	9.5
Silk Spinning and Twisting Spindles	1,388,989	1,490,888	101,899	7.3
Silk Looms	49,994	56,067	6,073	12.1

COTTON SPINDLES.

States	1900	1901	Inc.
Eastern	13,468,108	13,841,545	373,437
Middle	1,541,224	1,758,410	217,186
Southern	5,749 365	6,714 531	965,166
Western	264 286	286 586	22,300
	21,022,983	22,601,072	1,578,089

COTTON LOOMS.

	1900	1901	Inc.
Eastern States	308,246	321,706	13.460
Middle States	32,742	34 441	1,699
Southern States	141,394	159,796	18,402
Western States	6 016	6,539	523
	488,398	522,482	34,084

WOOLEN CARDS.

	1900	1901	Inc.
New Eng. States	3,663	3,762	99
Middle States	2,455	2,549	94
Southern States	388	375	*13
Western States	695	728	33
	7,201	7,414	213

*Decrease

WOOL AND WORSTED LOOMS.

	1900	1901	Inc.
New Eng. States	42,581	44,880	2,299
Middle States	31,751	34,250	2,499
Southern States	4,745	4,626	*119
Western States	3,922	4,148	226
	82,999	87,904	4,905

*Decrease.

WORSTED COMBS.

	1900	1901	Inc.
New Eng. States	809	810	1
Middle States	622	655	33
Southern States	6	6	0
Western States	19	21	2
	1,456	1,492	36

KNITTING MACHINES.

	1900	1901	Inc.
New Eng. States	14,268	14,923	655
Middle States	42,333	45 714	3 381
Southern States	6 706	9,556	2,850
Western States	12,414	12,762	348
	75,721	82 955	7,234

SILK SPINDLES.

	1900	1901	Inc.
Eastern States	74,680	90,560	15 880
Middle States	1,249 109	1,335,128	86,019
Southern States	60.000	60,000	0
Western States	5,200	5,200	0
	1,388,989	1,490,888	101,899

SILK LOOMS.

	1900	1901	Inc.
Eastern States	2,493	3,180	687
Middle States	45 128	50,560	5,432
Southern States	1,•51	1 826	•25
Western States	472	501	29
	49,944	56,067	6,148

*Decrease.

The Cotton and Silk Machinery Statistics of the United States for the Year 1901,

Giving the number of *Spindles* and *Looms* in the Cotton and Silk Industries

STATES.	COTTON.				SILK.			
	Spindles.		Looms.		Spindles.		Looms.	
	1900	1901	1900	1901	1900	1901	1900	1901
Alabama	490,[illegible]	512,660	10,984	12,238				
Arkansas	17,160	22,660	299	281				
California	10,000	10,000	200	200	1,500	1,500		8
Colorado	19,000	19,000	484	484				
Connecticut	1,040,165	1,104,172	21,265	22,535	51,720	55,100	1,350	1,558
Delaware	35,000	35,000	838	838		4,000	300	300
Georgia	1,218,504	1,303,917	26,033	30,363				
Illinois	33,000	33,000	808	812			167	238
Indiana	101,500	113,500	2,284	2,767				
Kansas	2,000	3,000						
Kentucky	44,656	66,736	991	991				
Louisiana	78,222	80,052	4,110	1,884				
Maine	862,139	875,780	23,150	23,451		5,000	125	200
Maryland	154,784	158,284	3,146	3,066			51	51
Massachusetts	8,012,831	8,230,142	182,683	189,436	17,000	24,500	868	948
Michigan				40	3,700	3,700	225	225
Mississippi	96,360	125,324	3,821	3,092				
Missouri	13,904	13,904	356	356				
Nebraska	15,488	15,488	416	416				
New Hampshire	1,343,923	1,343,165	34,919	39,389	4,000	4,000		400
New Jersey	385,004	426,316	2,281	3,145	343,219	334,494	24,470	25,858
New York	737,047	904,556	15,292	15,947	255,148	244,712	5,414	6,374
North Carolina	1,499,540	1,692,333	34,732	35,586	30,000	30,000	1,450	1,450
North Dakota		100						
Ohio	19,200	18,000	98	98			26	26
Pennsylvania	384,173	392,538	14,331	14,511	650,742	751,922	14,994	18,028
Rhode Island	2,090,138	2,167,326	43,691	44,357	1,960	1,960	110	74
South Carolina	1,794,657	2,185,020	47,725	60,093				
Tennessee	172,213	229,913	3,327	4,516				
Texas	50,924	80,145	1,066	2,172				
Utah	450	450					4	4
Vermont	118,912	120,960	2,538	2,538			40	
Virginia	148,547	180,147	5,436	5,770	30,000	30,000	350	325
West Virginia			23	23				
Wisconsin	32,584	32,584	1,071	1,085				
Totals	21,022,983	22,601,072	488,398	522,482	†1,383,989	1,490,888	49,944	56,067

†Spinning and Twisting.

that branch of the business. The increase of 7½ per cent., if continued, would result in doubling the spinning capacity of the country in less than ten years. The Southern rate of interest would double the number of spindles in four and one half years. The population of the country at the rate of increase during the past ten years would be doubled in about thirty-five years.

The woolen and worsted branch shows the smallest average increase, being 3 per cent. for woolen cards and 2½ per cent. for worsted combs. This is the only branch in which any of the four sections of the country show a decrease, there being a less number of woolen cards and woolen looms and worsted looms in the Southern States now than one year ago.

Woolen and Knitting Machinery Statistics of the United States for the Year 1901,

Giving the Sets of Woolen Cards in Woolen and Knitting Mills, the Worsted Combs, Looms, and Knitting Machines.

[The Shoddy Cards and Worsted Cards are not included under Woolen Sets or Combs.]

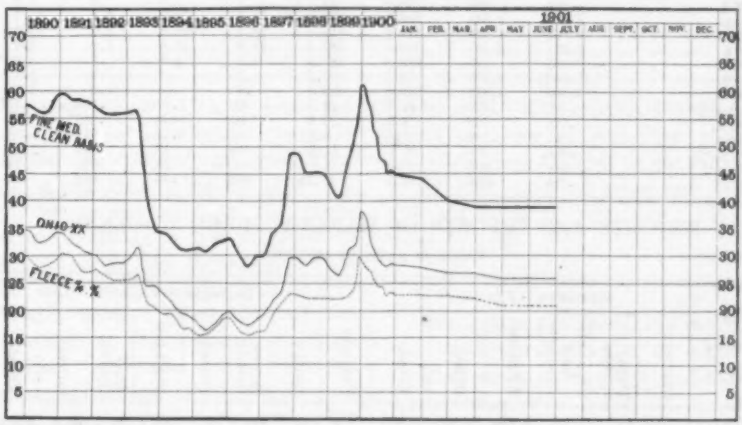
STATES.	WOOLEN.						KNITTING.			
	Sets of Woolen Cards (not including Worsted Cards or Shoddy Cards.)		Worsted Combs.		Looms.		Sets of Woolen Cards.		Knitting Machines.	
	1900	1 01	1900	1901	1900	1901	1900	1901	1900	1901
Alabama	3				12	18			64	127
Arkansas	8	6			39	39				
California	32	43			148	205			87	106
Colorado						3				
Connecticut	471	486	49	56	3,769	4,171	114	149	1,435	1,696
Delaware	13	13			240	240			909	982
Florida									5	5
Georgia	30	30			733	733			1,317	1,556
Idaho	2	2			7	7			18	18
Illinois	68	63	3	3	450	436	10	15	2,311	2,628
Indiana	106	104			916	945	23	33	1,194	863
Iowa	39	42			193	215			256	278
Kansas	3	3			17	17			6	9
Kentucky	67	57	6	6	1,127	1,027		1	75	156
Louisiana									75	14
Maine	424	423	19	23	3,036	3,154			156	143
Maryland	30	25			238	281			750	835
Massachusetts	1,542	1,594	468	462	20,960	21,657	48	53	6,313	7,142
Michigan	45	45		1	175	182	14	26	2,841	2,926
Minnesota	41	39			163	166		3	438	537
Mississippi	27	27			260	260			90	27
Missouri	32	39			228	392			122	126
Montana		1				6				
Nebraska	1				6				20	20
New Hampshire	383	390	34	30	4,494	4,514	87	64	4,146	3,923
New Jersey	194	226	118	137	4,425	4,486	26	26	1,350	2,127
New York	451	442	113	120	5,333	5,622	705	722	11,299	12,112
North Carolina	24	19			291	318		5	1,482	2,496
North Dakota	2	2			17	20				
Ohio	100	96	6	6	803	813	15	16	2,141	2,027
Oregon	33	33	1	1	169	203			23	23
Pennsylvania	1,024	1,041	392	398	21,753	23,902	42	49	28,775	30,493
Rhode Island	428	410	239	239	9,521	10,482	9	19	1,634	1,496
South Carolina					40	40			720	1,244
South Dakota	13	7			72					
Tennessee	73	70			1,317	1,211			873	1,264
Texas	4	6			118	146			30	90
Utah	21	23		1	114	114			103	111
Vermont	124	131			802	902	33	43	584	523
Virginia	52	48			313	300	34	44	753	1,270
Washington	2	2			30	37			22	10
West Virginia	42	41			296	292	2	2	472	472
Wisconsin	65	64	9	9	367	345	19	20	2,832	3,080
Wyoming	1	1			3	3				
Total	6,020	6,124	1,456	1,492	82,999	87,904	1,181	1,290	75,721	82,956
Sets of Woolen Cards in Knitting Mills	1,181	1,290								
Total Sets of Woolen Cards	7,201	7,414								

In the knitting industry we find an increase of 9½ per cent. in the number of knitting machines, which means a doubling of the capacity in less than eight years.

The number of silk spinning and twisting spindles increased 7 3/10 per cent. and the silk looms increased 11 2/10 per cent. in the past year. The rate of increase shown on silk looms would double the weaving capacity of the country in less than seven years.

In the rapid increase of our textile machinery and the lack of any corresponding increase in the outlet for goods are to be found the causes for the depression which has prevailed in every branch of textile industry. The comparisons which we have made may well lead our textile manufacturers to the conclusion that their attention may be profitably employed in finding new outlets for their manufactured goods.

WOOL MARKET.



July enters with a slight improved feeling manifesting itself in wool circles. This has not, however, been accompanied by any strengthening of price. Holders of wool have found it somewhat easier to secure the asking price. The weakest part of the market has been in coarse wools, due to the immense stocks of cross-bred wools throughout the world; while the most marked influence of these stocks has been to depress the quotations of coarse wools they have undoubtedly exerted a sympathetic effect upon fine grades.

There has been a slight improvement in the goods market, and many mills have secured orders which promise to keep them busy well into the light weight season. Purchases of wool, however, continue light in volume as a large bulk of the orders for goods are on fabrics into which cotton and shoddy figure largely as raw materials. Large sales of the new clip have been made in the West at prices fully up to if not slightly in advance of seaboard quotations indicating the confidence of dealers in the future of wool values.

There is a general belief that the prices for wool are now at the lowest point that they are likely to reach and that, if the new clip has been moved to the East prices will strengthen. No immediate rise is, however, expected as general conditions do not warrant any marked advance; while there has been a slight improvement in the goods market, the mills have come very far from selling all the goods that they could turn out. There are undoubtedly large stocks of the

old clip remaining on hand in addition to the new clip now coming forward. Woolen manufacturing abroad continues in a very depressed condition, resulting in low prices for the staple. Our tariff does not prevent foreign conditions from effecting our domestic market, and the foreign market is a factor in regulating the price of wool in our home markets.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy, noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.5
1897	5.271	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.663	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
6 mos.	.107	.115	44.0	53.9	.378	1.080	.105	.702
Jan.	.018	.018	9.2	10.6	.048	.16	.028	.15
Feb.	.042	.089	7.5	8.3	.037	.11	.011	.08
March	.004	.004	10.3	14.6	.039	.13	.013	.08
April	.002	.003	8.9	11	.043	.14	.039	.24
May	.004	.005	16.5	18.75	.046	.15	.028	.16

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total.	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.098	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.9	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.653	2.860	9.135	8.9	218.9	199.3	4.5	13.0	26.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.612	.414	.474	4.290	4.074	10.89	17.9	39.6	60.4	.4	7.6	3.9	9.6	139.4
1899	.811	.169	.437	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
6 mos.	.471	.040	.583	3.969	3.107	8.17	13.57	21.71	24.95	.51	7.29	2.69	2.61	78.33
Jan.	.110	.044	.165	.578	.255	1.15	1.98	5.57	8.31	.02	.34	.12	.59	16.83
Feb.	.125	.012	.037	.80	.199	1.17	1.87	3.99	6.31	.04	.62	.19	.57	13.61
March	.098	.008	.080	.66	.46	13.06	2.16	2.52	4.98	.04	1.07	.18	.34	11.39
April	.066	.001	.015	.78	.30	11.62	2.78	1.61	2.81	.06	.52	.21	.32	8.26
May	1.110	.001	.015	.55	.40	10.76	3.11	1.63	2.29	.02	.69	.19	.44	8.19

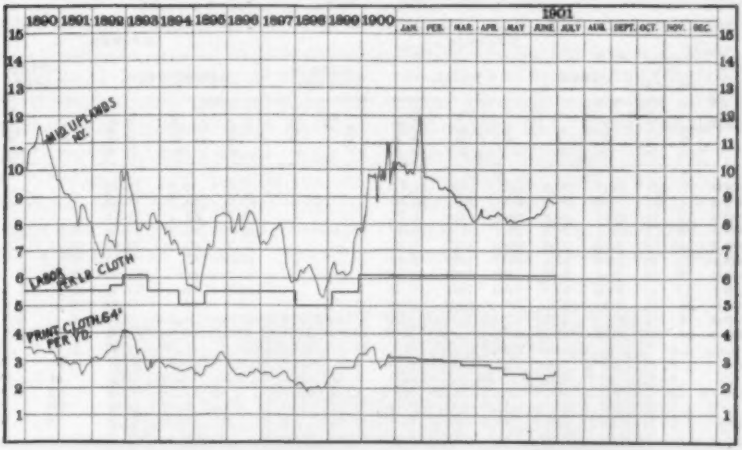
—The production of cotton in Russian middle Asia, Bokhara, and Khiva in 1900 is reported as showing a notable increase over the preceding year, which is chiefly attributed to the use of first-class American seed. Most of the former cornfields are being planted with cotton, so that a total of 7,780,000 cwts. can now be raised. The general increase of cotton planting in Asiatic lands was 44.5 per cent. over the product of 1899, the increase in the Russian districts being 28.5 per cent.

—Praise is seldom the coin of the realm.—Beauchene.

—In politics it is sometimes necessary to fall in order to rebound.—A. Tournier.

—It is more difficult to repair a fault than to avoid committing it.—Paul Bourget.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900
1901
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
MID UPLANDS NEW YORK
LABOR PER LB CLOTH
PRINT CLOTH 64" PER YD.

In consequence of an expected corner in July cotton which has been advertised extensively in speculative circles, and also by reason of the undoubted improvement in the goods market resulting in free purchase by manufacturers, the quotations for the raw material at the beginning of July show a distinct advance from that prevailing at the beginning of June. Weather conditions have continued favorable through the cotton sections and the new crop is doing well. The safety of the new crop is, however, very far from being assured, and weather reports will continue to be availed of by speculators to zigzag prices. At the close of June there was a slight easing down of prices. The quotations for spot and near by months show a substantial premium over the distant months. The advance in prices has resulted in a correspondingly increased movement toward the seaboard.

Both in England and on the Continent the cotton manufacturing continues dull and unsatisfactory. Mills throughout Europe are running on short time and further curtailment of production is proposed. Foreign manufacturers have, however, shown a disposition to replenish depleted stock and the movement of spot cotton in foreign markets during the middle and latter part of June was greater than for many previous months.

The total visible supply through the world on June 28, according to the Chronicle, was 2,866,908 bales; as compared with 1,869,053 bales last year; 3,797,592 bales in 1899; and 3,133,500 bales in 1898.

—Some time ago the Texas railroad commissioners declined to fix a lower freight rate on cotton in round bales. A reduction was asked for on the ground that owing to the greater density of the round bale much more cotton could be packed in a car, and consequently, according to the principles already laid down by the commissioners themselves for their own guidance, a lower rate should be fixed on round bales. Action was taken to compel the commissioners to fix a lower rate on round bales. It was shown that the average weight of square baled cotton carried in a car was 26,773 lbs., yielding a revenue of $144.16. The revenue per mile was 47 3/10 and the bales per car averaged 50 7/10. The number of days in transit averaged 9 1/10. The round baled cotton averaged 49,221 lbs. per car and a revenue per car of $265.03. The revenue per car miles averaged 92 3/10 and the time in transit 5 6/10 days. The court decided against the railroad commissioners, and in favor of a lower rate on the round bale cotton.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value	Lbs.	Value.	Lbs.	Value	Value. per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1894	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2679	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	25	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1862	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	..	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
6 mos.	3.4	7.5	1833.3	1785.6	1836.7	1793.1	9.76	27.05	14.41	20.84	29.96	14.37	3.19	.97
Jan.	1.83	3.7	367.6	354.8	369.4	358.5	9.75	4.84	2.52	5.59	8.66	15.5	.48	.15
Feb.	1.13	2.2	233.2	221.2	234.3	223.4	9.55	5.20	2.67	4.39	6.82	15.5	.14	.04
March	.95	1.80	299.8	266.4	300.8	268.2	8.91	4.05	2.09	3.89	6.20	15.9	.69	.18
April	2.13	3.84	257.4	218.8	259.6	221.9	8.54	2.93	1.67	4.34	6.51	15.0	.30	.12
May	1.43	2.51	208.8	169.4	210.2	172.4	8.20	3.01	1.44	3.88	5.08	13.4	.63	.19

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	73	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	34	76	5	24	143	33.9	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	59.9	332
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
6 mos.	27.18	28.46	7.97	15.71	79.32	25.66	.99	7.16	99.98	9.64	22.54	28.76	194.73
Jan.	4.95	3.41	1.11	2.57	12.04	12.48	.22	1.25	22.16	1.30	4.99	3.72	46.12
Feb.	4.96	4.96	1.16	2.38	13.46	7.49	.31	1.66	19.76	1.34	6.91	4.11	41.58
March	4.92	7.08	1.40	2.82	16.22	4.77	.16	1.85	18.59	1.38	6.59	3.72	37.06
April	8.76	5.80	1.65	2.70	18.91	3.48	.12	1.25	17.40	1.23	5.67	3.33	37.48
May	7.26	8.66	1.68	3.19	20.79	2.68	.04	1.10	13.44	1.32	4.81	3.80	27.23

—The weak point in England's great industrial fabric was clearly pointed out by Winston Churchill, a Lancashire M. P., in a recent address before his constituents. Speaking of the vast cotton industry of Lancashire, he said:

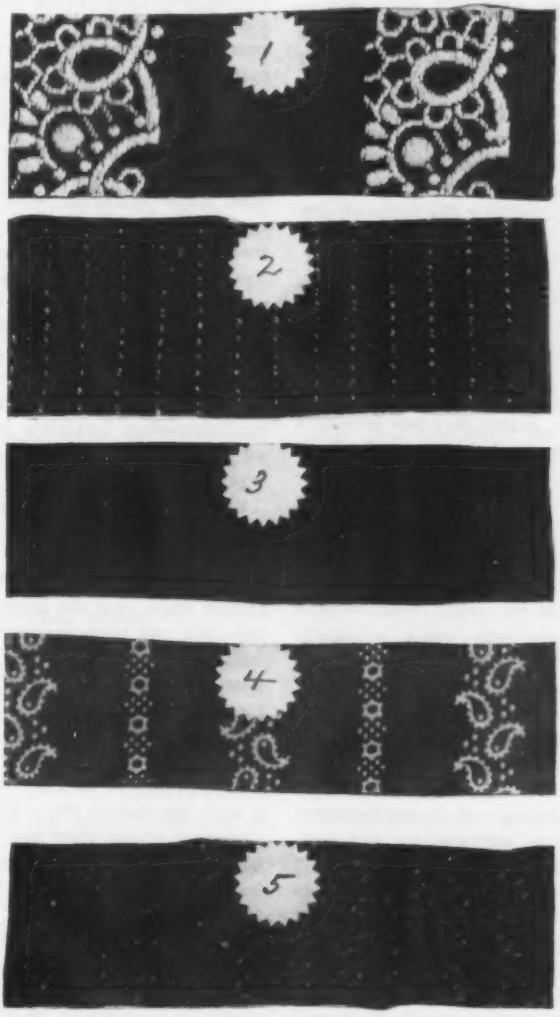
We depend entirely for our existence upon trade, and must vigilantly watch our commercial position. These things are brought home to me very powerfully because I was a Lancashire M. P. If you want to see an artificial country, look at Lancashire. There in a stony, barren country is an enormous concentration of population in great cities, where chimneys rise instead of forests. The whole aspect is essentially artificial. I have been told that within seven miles of Manchester there were no fewer than six millions of human beings, and the greater part of these are dependent for their daily bread upon the condition of the crop at one end of the world and the state of the market at the other. I do not say there is danger; I do not think there is. One thing ensures the cotton trade in Lancashire for many long days; although cotton might be spun in other countries, it takes more than two generations to make a cotton operative. This is the foundation of our Imperial greatness.

—The question of old age pensions is now being agitated in France. The manufacturers of all classes of goods are very much disturbed over the prospect of an additional tax being placed upon their business to provide the money for these pensions.

Seasonable Fabrics.

SILKS.

The local silk market is comparatively dull at the present time, but stocks are in excellent shape and confined mostly to staple goods. This is a "between-season's" time in the silk business, but prospects for fall are bright and a large volume of business has already been booked. There is not the slightest doubt but that silks will enter largely into the make-up of fall garments and the plain taffeta will again be the leader. Many of the mills are running full time on fall orders for plain goods, but of course the various lines of fancies are not as yet fully developed. One particular style which has already proved a pronounced success, is a white lace effect stripe on a navy blue and black ground, with small satin jacquard



figures in self colors. This line is made in some 15 different patterns; No. 1 will convey an idea of the general effect. This cloth is manufactured by the Post & Sheldon Co., and in a 22-inch width sells at 57½ cents regular.

LADIES' WEAR WOOLENS.

Plain goods will be in strong favor for fall and very few fancies will be sold, except in small hair lines or similar effects. The trade will also be on lighter weight fabrics; the extreme heavy weights of last season being no longer considered desirable. No. 2 represents a style of a 50-inch, all worsted hair line stripe cloth on which Sack & Stiasteny have done a good business at 50 cents regular. The same concern has also done very well on a 50-inch all wool camels' hair mixture in plain hair line stripe effects at 85 cents regular, as illustrated in No. 3.

COTTON GOODS.

The season for cotton wash dress goods is practically over and jobbers are busily engaged in cleaning up their stocks. New lines are not yet being shown, except in a few instances where staple lines have already been opened.

No. 4 shows a style of the Rankin percales, 36 inches wide, which sell at 9 cents net in an 84 by 84 cloth.

WOOLENS.

The market for men's wear woolens and worsteds still rules unusually quiet, and buyers are extremely conservative in ordering. Until a short time ago the weather was so extremely adverse to favorable trade that business on spring garments was light, which fact was of course reflected in the fall buying of manufacturers. Some lines are well sold up, but these are the exceptions. A line of soft finished, twist cassimeres, which has sold unusually well, is represented at No. 5. This is from the line of Oelbermann, Dommerich & Co., and sold at $1.32½ regular in 6/4 width. This particular fabric has also been bought by the manufacturers of ladies' garments, who are utilizing it for their fall lines, both for skirts and for long outer garments. This fact has undoubtedly added to its success.

Increased Markets for Our Knit Goods Mills.

The growth of the knit goods industry in the United States has been so rapid during the past few years that the subject of increased markets is becoming one of vital importance to the manufacturer of this class of goods. The depression in the underwear and hosiery trade which we are experiencing at the present time is largely a result of over-production, following upon the unprecedented business of a year or so ago, and should serve as a strong reminder that more attention should be devoted to the building up of our export trade. An established foreign trade would not only serve as a safety valve to maintain trade equilibrium at home, but would also tend to stimulate our manufacturers to greater activity and progress, and would result in the extending of our knit goods manufacturing interests by offering an inducement for the investments of capitalists.

Since the close of the Spanish-American war a very fair demand has arisen for certain low grades of underwear for the Porto Rican and Cuban trade, and the increase in this direction has been extremely gratifying. These colonies have hitherto been purchasing the greater part of their knit goods from Spain, but the demand, owing to the conditions in the islands, was only for the very lowest grades of knit goods; but with a new era before them and brighter prospects ahead they are asking for better merchandise and too much attention cannot be devoted to catering for this trade.

The South American export trade is also developing to a marked extent, but here we are considerably hampered by inadequate shipping facilities, as goods can be shipped to any

part of South America from Europe at a much less expense than if shipped from the United States. Increased facilities for transportation with reduced rates would undoubtedly result in a large increase in our South American trade.

Prospects for an increase of trade with China are also rapidly improving and as soon as their troubles are over a revival of trade in this direction may be looked for, indications of which are already being noticed. The cotton trade, which already has such a strong foothold in China, is serving as an excellent introduction for our other textile productions, and even within the last month commission houses and selling agents have received a number of inquiries for underwear for the China market, mostly on goods under $4.25 per dozen; on goods of this character several sales have recently been made.

In this connection the changing attitude of the administration toward the matter of our foreign trade relations is of great significance, and the indications at the present time are that next winter steps will be taken to modify the present tariff on a basis of reciprocity with other countries, but whether or not the knit goods industry is on a strong enough basis to warrant any change in the protective policy is an open question and one which demands a great deal of serious consideration before any definite steps are taken. European countries are realizing more and more every day the important place which this country is taking among the commercial nations of the world; it is only a question of time, and that time is perhaps not so very far distant, when a lowering of our tariff walls may be to our own best interests.

Another matter to which it behooves our manufacturers to devote more attention, is the making of higher grades of goods for our home market to take the place of such goods as are still being imported from France and Switzerland. We refer more particularly to the finer grades of men's balbriggan underwear, large quantities of which are still imported from France; and the better qualities of ladies' Swiss ribbed underwear manufactured in Switzerland. There is no question whatever in the mind of the writer but that underwear equal to the finest Swiss goods can be produced in this country and can be readily marketed in spite of the strong prejudice in favor of goods of foreign manufacture, which, unfortunately, still exists in the minds of many, but which, it is gratifying to note, is being fast wiped out by the rapid forward strides of American mills.

During the past few years, more particularly the last three years, there has been a phenomenal development of our hosiery manufacturing interests and we are today turning out lines of goods which only a short time ago were being imported from Germany and England. Considerable attention is being directed toward the manufacture of full fashioned hosiery both for men's and women's wear, and many mills are being equipped with the necessary machinery for producing these goods, and a much better article is being produced today by our own mills to sell to the trade at $1.90 and $2.00 than can be landed for anything like that figure. The prejudice in favor of foreign colors works to a certain extent against the domestic manufacture, but this prejudice, too, is being gradually overcome, and today some of the well-known and extensively advertised domestic brands are held almost as high in popular favor as the best known foreign dyed.

More attention should also be devoted to many of the smaller details which always characterize the foreign made stocking—such as the neatly pressed heel and toe, the uniform stamping, and the careful banding, boxing and labeling, and many other seemingly trivial points, which certainly do not impair the actual in-

trinsic value of the article, but which should not be overlooked, as they all count toward making the finished package more attractive to the buyer.

With the natural advantages which we have at our disposal we should before many years succeed in gaining for ourselves a great share of the commerce of the world, and, among the textiles, the knit goods industries should lead the van.

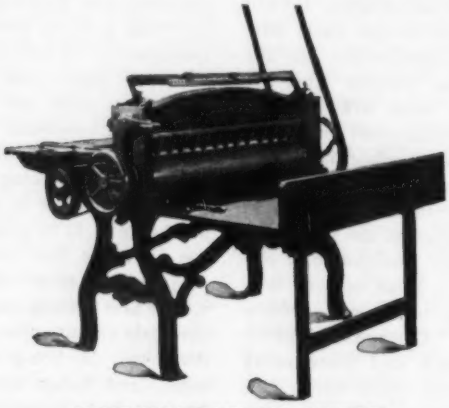
FOREIGN TRADE.

The Paper Box Question.

During the recent convention of southern delegates, held in Philadelphia to discuss trade questions, many problems important to the textile trade were considered by that body.

Not among the least of these vital problems was the freight on paper boxes and the possibility of diminishing this item of expense. After getting data from the large mills, especially in the hosiery, underwear, knitting, shoe and other industries where paper boxes are a necessity, the freight expenditure was found to figure three times greater than for other commodities. This enormous proportion, entering as it does into the cost of production without in the least enhancing the quality of the product, aroused the interest of the assembly and brought forth numerous suggestions, backed in a number of cases with practical experience.

A few years ago an enterprising mill, situated some distance from the source of the paper box supply, after suffering vexatious delays and high freight rates, added a paper box plant of small size with such remarkable success that it was allowed to grow in size as the needs demanded until its proportions represented a full equipment of the latest appliances and most modern machinery for the manufacture of their own special paper boxes. The large store-room formerly reserved for made-up boxes of various sizes was converted into a productive factory; the money locked up in box stock was transferred into machinery; and the amount formerly paid out for freight was applied for labor. Many mills now running their own paper box plants have paid for the investment within a year, as, with careful management, a saving of 40 per cent. or more on the cost of paper boxes has been made.



KEYSTONE SCORER AND CUTTER.

With a view of getting a good idea of the method of making paper boxes and of the kind of machinery necessary, a visit was recently paid to the machine shop of the Charles Beck Paper Company Limited, No. 609 Chestnut St., Philadelphia, extending half a block in length from Chestnut to Ranstead Street, where the Keystone Paper Box Machinery is manufactured.

The first machine required in their process of paper box making is the

Keystone scorer. The paper board is fed into this machine in sheets according to the size of the box desired, which makes a score mark parallel

KEYSTONE POWER CORNER CUTTER.

with the four edges to correspond with the depth of the box, so that the paper board will fold straight along the lines without breaking, and form the box into its correct shape. The body of the box and lid are treated in the same manner. For large quantities a double scoring machine is used, which scores in both directions with one feeding of the sheet, thereby doubling the output.

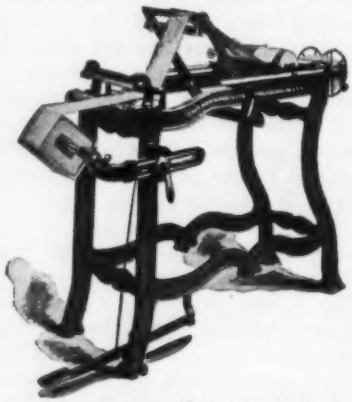
After the square, or oblong piece of paper board is scored it is fed, a number of thicknesses at a time into the Keystone corner cutter, after which it is folded into the shape of the box. The blades on this machine are so arranged that only the actual cutting edges come in contact with each other, and in this way avoid unnecessary friction and wear. Boxes are also made by having V shapes cut in the two side edges, instead of cutting out the corners, an operation adopted for the purpose of preventing waste of material in deep boxes.

The corners of boxes may be fastened together on a corner wire stitcher, which stitches the corners with a thin flat wire. Corners are usually fastened with strips of gummed paper or muslin fed from a roll into a corner stayer, and the machine automatically cuts off the required length for the size of the box, and stays the corners together. These machines will stay the corners of paper boxes from ¼ inch up to 3 inches deep by foot power, and up to 8 inches deep by belt power. They are also made to turn the stay-strip automatically over into the inside of the box.

KEYSTONE SHEAR.

Instead of cutting the corners of deep boxes, as previously described,

there will be less waste if the sides and bottom are made in one piece with a flange running along the edges to which the end pieces are pasted. These end pieces are automatically pasted and put on by the ending machine, and it is only necessary for the operator to feed the body of the box to the machine which does the rest.

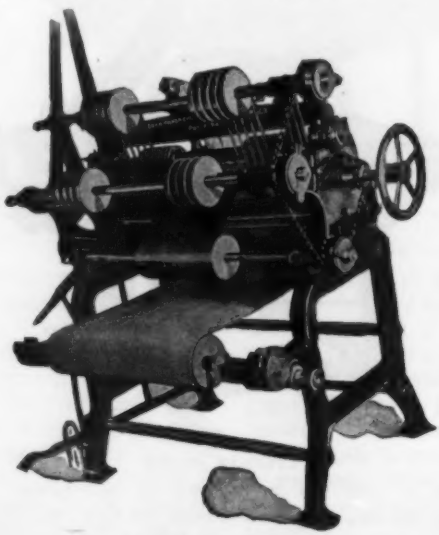


KEYSTONE COVERING MACHINE.

For cutting paper boards into ends and various sizes, as well as general cutting, the Keystone shears are used. It has gauges to enable uniform cutting to accurate sizes, a most necessary thing in paper box making. The knife blades have adjustments so that they will cut true no matter how much they have been ground or worn.

The high finish on the outside of paper boxes is obtained by pasting on glazed colored papers, which operation is done on the Keystone covering machine. The paper in rolls, cut to correct width, is carried over paste wheels to the front of the machine, where it is wrapped around the box by the operator, and cut to the required length with knife blades worked by a treadle. This method of using roll paper is far more economical than where paper is used in sheets and produces far better and more uniform work.

Although roll paper for covering can be cut to order by the paper supply houses, many paper box manufactories have found it more profitable to slit the roll on their own machines. For this purpose the Keystone slitter is used. It has a number of circular knives arranged in pairs, and adjustable to the various widths of paper to be slit. Starting from the parent roll, the paper passes through the knives and is wound upon two rewinding bars. The more complete machine is arranged with the parent roll and



KEYSTONE 3-BAR SLITTER.

three rewinding rolls on the same side of the machine, bringing the entire operation directly under the eye of the operator. It has improved time saving devices which greatly facilitate the output where large quantities are to be done.

For boxes requiring thumb-holes the Keystone thumb-hole cutter is employed, which cuts both sides of the box at one clip. It can be quickly adjusted for large or small boxes.

A small outfit for making paper boxes, equipped with Keystone machinery consisting of Keystone scorer, shears, corner cutter and covering machine, costing less than $500, and with but a few operators, will turn out as many as 500 finished boxes per day.

Our correspondent was also informed that those mills who had put in their own paper box making plants, even with inexperienced operators had, in many cases, enlarged their plants adding printing presses for printing labels and other work. Without exception the investment had proven most satisfactory and profitable, to say nothing of the convenience of having the boxes when wanted.

cards were required for its production on the looms. Fig. 1 shows the apparatus required for this process. The original design or figure which is to be woven is placed on the upright board (V V) which is fastened to the truck (I). This truck is mounted on wheels and runs on a track so as to permit of easy adjustment of the distance between the design and the lens. The room is divided by a partition (W) separating the light room (A) from the dark room (B). In the wall of this partition are placed a pair of lenses. The frame holding the lenses is so constructed that plates may be inserted between them. The illustration shows one of these plates in position. There is another truck in the dark room (B) mounted on wheels and movable on a track. On this truck two frames (R R) and (P P) are placed.

The light coming from the object on (V V) will pass through the lenses and be thrown upon the screens. In the dark room the image of the object will be upside down, or in a reversed position from that of the object outside. This is due to the crossing of the rays of light. The screen (R R) is placed at the point where these rays cross, or

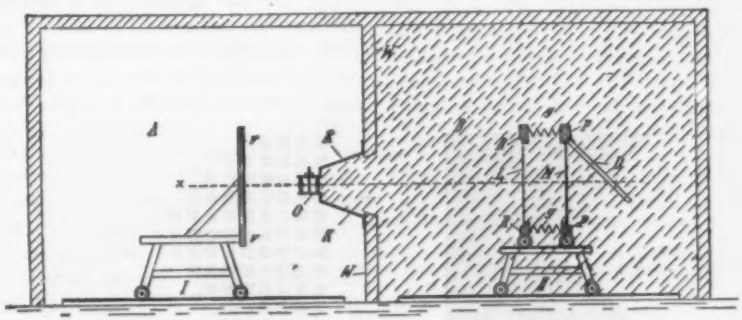


FIG. 1.

Jacquard Pattern Making by Photography.

In the May issue on Page 854 we noted that a Jacquard pattern for the scene representing the coronation of Franz Josef I. had been made by the Szczpanik photographic process. The work of making the design is said to have taken six hours only. 43776

in other words, at the point where the rays are focused. If a hole be made in the screen (R R) the light will pass through this hole, and the image will be reproduced on the screen (P P) but in a reversed position. In the frame (R R) a perforated plate (Fig. 2) is set, and in the frame (P P) a glass plate is fixed.

There are two methods of using this apparatus for making jacquard patterns. The design to be reproduced is placed on the board (V V) in front of the lens. Supposing the design shown at Fig. 3 to be used, the light coming from the white part of this design would pass through the lens and be thrown upon the first screen (1), while the black part emitting no light will leave the balance of the figure dark. If a plate having a square hole in it is inserted between the lenses, the rays of light will strike

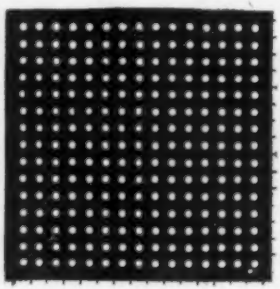


FIG. 2.

the holes in the plate (1) and passing through them will be reproduced on the plate (M) in the form shown at (Fig. 4).

If the pattern to be produced is one that can be made by a combination of two weaves, one for the ground and the other for the figure, the design is

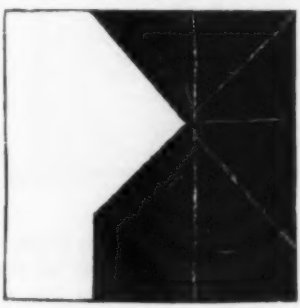


FIG. 3.

placed on the board and the figure is exposed with a plate having say a square hole between the lenses. Then this plate having the square hole is exchanged for one having say a triangular hole, and the ground work is exposed. In this way the design is thrown on the plate (M), and the figure is represented by square, and the ground work by triangular points.

Suitable photographic paper is placed behind the glass (M) and the door (D) is brought down pressing this paper tightly against the glass and holding it firmly in position; by exposing alternately the figure and the ground work of the design with different plates having different shaped holes in them between the lenses; the figure is photographed upon the paper. This is the method adopted for the simple designs requiring but two weaves.

When it is desired to use this process to reproduce a design in which there is very fine shading, suitable weaves are selected for each shade which is to be shown in the woven goods. The draft of the weave to be used for the darkest shade is then perforated in the plate (1) with the largest sized holes. The draft for the weave which is to give the next lighter shade is then perforated in the same plate with smaller holes, and in this way all the different weaves to be used are punctured in the plate each with a different size hole, the weave for the lightest shade having the smallest holes.

The scene to be reproduced is placed on the board (V V); the plate perforated as already described is placed in

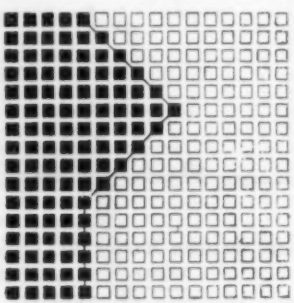
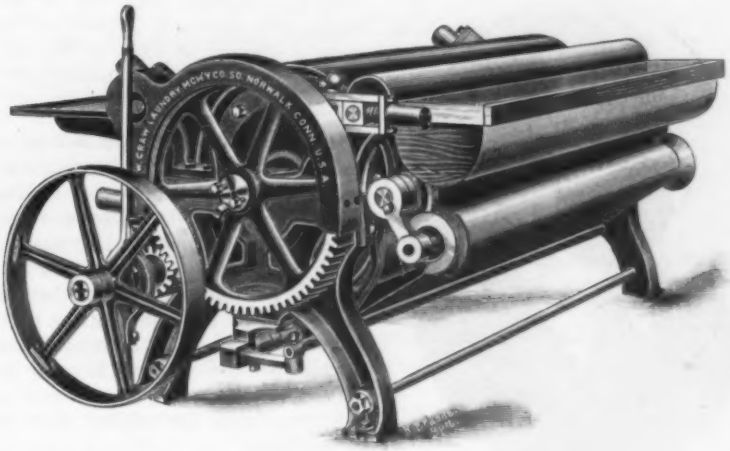


FIG. 4.

the frame (R R), and the exposure is made. The dark shades of the picture will throw out weak rays of light which are strong enough to affect the photographic paper through the large holes, but not through the small holes.

As the large holes are arranged according to the weave required for the darkest shade, it follows that the portions of the perforated screen (L) on which these weak rays of light fall, will be printed at (M) with the corresponding weave. The next smaller sized holes will admit sufficient light from the next lighter shades of the picture to make an impression on the paper, and these will be printed in accordance with the weave required for that shade.



Automatic Ironing Machine for Knit Goods.

The accompanying illustration shows the improved ironing machine for knit goods manufactured by the J. W. Craw Machinery Co., South Norwalk, Conn. This machinery irons and presses ribbed and flat knit underwear, giving a fine, smooth finish and attractive appearance. It presses the goods so flat that a much larger quantity can be packed in a case. It does not break the buttons. It is now in operation in many mills, giving good satisfaction.

The builders wish to call the attention of manufacturers to the low cost of operating this machine. No skilled labor is required, and the various parts are so well guarded that the danger of accident to the employees is reduced to a minimum.

Adjustment is easily made for different classes of goods, and the success which it has met with wherever installed is the best guarantee of its merit. The builders claim that it will do a larger quantity of better work than any other machine on the market.

The following letters from users of this ironing machine speak for themselves:

Adrian Knitting Company, Adrian, Mich.
The J. W. Craw Laundry Mchy. Co.,
So. Norwalk, Conn.

Gentlemen:

Replying to your favor of the 11th inst. would say that the Mangle purchased of you Dec. 31st, 1900, and which we are using, presses and irons the goods we manufacture very satisfactorily. More and greatly superior work can be done than with a press and at much less cost and is therefore more economical.

Yours truly,
Adrian Knitting Co.
Per Laud J. Lewis.

J. C. Roulette & Co., Hagerstown, Md.
The J. W. Craw Laundry Mchy. Co.,
South Norwalk, Conn.

Gentlemen:

Replying to yours of Oct. 23, regarding the second mangle which you recently furnished and set up for us would say that like the first one it is doing its work very satisfactorily and we are very much pleased with same.

Very truly yours,
J. C. Roulette & Co.

—Vanity is the cobweb of the mind.
—Commerson.

The Action of Caustic Soda on Wool.

BY C. EARLE WASHBURN,
Awarded The Textile World's Gold Medal at the Philadelphia Textile School, June 6th, 1901.

The following article is the thesis for which C. Earle Washburn was awarded the Textile World's gold medal at the Philadelphia Textile School this year. It is a very creditable essay, and illustrates one of the important objects aimed for in this

C. EARLE WASHBURN

school; i. e., the encouragement of students to follow lines of original research, and to demonstrate by practical experience what he is trying to prove. The facts demonstrated by these experiments have been used abroad with considerable success in treating wool for certain fabrics. The line of research, however, is quite original, and certainly praiseworthy.

The winner of the medal, is the son of Charles E. Washburn, who was for some years overseer of dyeing at the Blackinton Woolen Co., and since the closing down of that establishment has filled a similar position at East Rochester.

Young Washburn was born in Woonsocket in 1878, and received his early education in that place and in North Adams, graduating from the high school there in 1897. For the two years following he worked as pattern weaver and as second-hand in the dye-house of the Blackinton Woolen Co., and, appreciating the advantages to be gained by a course at a textile school, entered the chemistry and dyeing department of the Philadelphia Textile School in 1899, graduating with honors in June, 1901.

He will work with his father to acquaint himself more thoroughly with the practical conditions of mill work, and ultimately expects to become a chemist or dyer on his own account in some textile manufacturing establishment.

It is claimed that the action of caustic soda solutions of certain concentrations on wool is to increase the tensile strength of the fibre, and also its affinity for dye-stuffs. It was desired to make a thorough investigation of the subject, and to discover the conditions for obtaining the maximum effect. The following is an outline of the method pursued in making the investigation.

1. Determined the original strength of the yarn.

2. Steeped in caustic soda for 5 minutes at the following concentrations: 5 deg. Tw., 25 deg. Tw., 35 deg. Tw., 40 deg. Tw., 60 deg. Tw., 70 deg. Tw., 80 deg. Tw., 82 deg. Tw., 90 deg. Tw., 100 deg. Tw.

3. Selected degree giving maximum strength and steep for: 1 m., 5 m., 10 m., 20 m., 30 m., 60 m.

4. Steeped in the best degree of concentration and for the best time varying the temperature: 0 deg. C., 10 deg. C., 15 deg. C., 20 deg. C., 30 deg. C., 60 deg. C., 100 deg C.

5. Used different qualities of wool under the best conditions.

6. Used different methods for washing after steeping.

7. For Dyeing Qualities.

Dyed skeins of treated yarn and also untreated in same bath with 1—Acid Dyes; 2—Basic Dyes; 3—Mordant Dyes; 4—Substantive Dyes.

A brief sketch of observations made follow.

Samples of worsted yarn having a tensile strength of 41.3 lbs. were treated with caustic soda of varying strengths for 5 minutes. They were quickly washed in water, then in a 1 per cent. solution of sulphuric acid, followed by a washing with water, after which they were dried and their tensile strength redetermined. When solutions of caustic soda of 5 per cent. to 60 per cent. Tw. were used, the wool was found to rapidly disintegrate and as long as the yarn remained wet would be drawn out to nearly twice its original length. On drying, the yarn was very much felted and had greatly decreased in strength. It was found that caustic soda solution at 35 deg. Tw. had the most powerful action on the yarn, it being entirely disintegrated at this point of concentration. It was observed that in solutions from 70 deg. Tw. to 100 deg. Tw. the yarn was not felted.

The maximum tensile strength of the yarn was found to be at 82 deg. Tw. when a tensile strength of 55.5 lbs. was found.

It was found that if the caustic soda was allowed to act for a longer time than 5 m. the tensile strength was reduced. Wool which had been treated with concentrated alkali solutions showed a greater affinity for coloring matters than ordinary wool.

The results and observations taken from the various experiments follow:

Forty strands of 2/36 yarn were placed in the clamps of a tensile strength machine so that the strands were parallel and that each might exert the same resistance to strain.

After having arranged the yarn in the upper clamp, the lower clamp was placed in such a position that the distance between the upper and the lower was exactly one inch. The power was now applied and the dial was found to register 38.5 lbs. The above operation was repeated ten times with the following results:

Forty lbs.; 38; 40.5; 38.5; 42; 37.5; 39.5; 40; and 38. Taking an average of the above results we have 41.3 lbs. for the original tensile strength of the yarn to be used in making the tests.

After having determined the original tensile strength we now proceed to experiment with the yarn in caustic soda solutions of varying strengths at different temperatures and for varying lengths of time. The first

(Continued in August).

Memoirs of a Veteran Wool Carder

(Continued from June.)

I worked at spare spinning for a month or so, and during this time exchanged my English money for American currency at the rate of $11 for each pound. One day I started on foot with my carpet bag in hand for North Andover. Arriving there about half past five, I found Sutton's Mill and asked for the boss spinner. Seeing that I looked a little green, he put me on an old blanket jack. I began work next morning and worked until noon time. At 2 p. m. I asked the spinner what time the train started for Lowell. He said, "2.30." "All right," I replied, "I am off; if I can't find a better job than this, I am going to tramp."

I stayed at Lowell that night, and the next morning arose at 4 o'clock and with carpet bag in hand went for the depot. I asked the ticket agent what time the next train left Lowell. He said, "5 o'clock." I asked him for a ticket, and he said, "Where do you want to go?" "Where there are some woolen mills," I replied. He told me that there were lots of woolen mills in Lowell, and I answered, "Yes, but I don't like Lowell." "Well," he said, "I can give you a ticket for New Haven, Conn." "All right," I replied, "give it to me."

Little did I know where New Haven was; however, I arrived there about noon time, bought some crackers and cheese for dinner, and then went to the depot and asked the agent where the woolen mills were. He asked me

what I could do, and I told him I could spin. "Well," he said, "they want spinners at Beacon Falls." He said it was not very far away. So I bought a ticket for Beacon Falls and reached that place at half past six. The depot building was a little shanty, and I felt homesick when I looked around and found about twenty houses and one store clustered in a valley surrounded by mountains. However, I hunted up the boss spinner, and he told me to come to work in the morning. In the morning I went to the mill and asked for Mr. Warner, the boss spinner. A Mr. Wolf was agent of the mill at this time. The boss set me to work on a jack, and I got along very well. This was in November, 1864.

I soon got acquainted with the mill help, and being something of a greenhorn some of them tried to take advantage of me. On Christmas day a party of us went to Naugatuck, and there some of them imbibed a little too much booze, and on their way home Mike, a burly spinner, picked on me and proposed to give me a good thrashing; before he got through with the job he found himself in the Naugatuck river, and we fished him out nearly drowned. He did not bother me after that.

I worked in this mill until the first of March, 1865, and did very well, earning from $50 to $70 a month. Upon leaving this place I went to Providence with a chum and we called at the old Elm Street Mill. The first man I met here was Josh Parsons, who was running a hand jack, and whom I had known as a clogger in England. I stayed a week in Providence, and one day five of us including Josh hired a small sail boat and went down Providence river to Bullocks Point, now Crescent Park. When coming back a squall struck the boat, but we were all good swimmers, and reached shore near Field's Point barely alive.

On the next day my chum and I got our Connecticut and Rhode Island money changed for Pennsylvania bills, as we had decided to go to Philadelphia. We started on the 8th of March, and reached Philadelphia on the 10th. As soon as we landed, we learned that we could get $15 a month as volunteers for the war. Here I found a friend of mine whom I had known in England, and who was a great sporting man. I told him I was a jumper. He invited us into his house, and asked what I could do. I took him out for a trial and satisfied him so that he issued a general challenge at a hop, skip and jump. We waited six weeks without any one accepting, and then gave this enterprise up.

While in Philadelphia the news reached the city one day that Lincoln had been shot, and I will never forget the intense excitement over the news. On the first of May I started for Boston, and landed there the next day. I traveled by the Stonington line, and again found quite a number of soldiers' bodies on board the boat, but I was not quite so green this time as on the former occasion, and did not sleep on the boxes. I hung around Boston for a few days enquiring for woolen mills, and while sauntering along the docks I saw a lot of bananas offered for sale. Although I did not know what they were, I bought one and went into a side street to eat it. I tried to bite the banana without peeling it, but I could not get my teeth through the outside and finally threw it into the street wondering how people could eat such stuff.

Seeing an advertisement for help wanted by the Aetna Mills, Watertown, I went out there and found a number of friends whom I had known in England. I secured work at this mill and during my stay organized the Tinhorn Cricket Club, which was well known in this section. I was still quite a greenhorn, as you may judge by an incident which happened one day at the dinner table. I saw some nice red fruit sliced up, and thinking it would just suit me, I tried it; as soon as I got a taste, I looked around and made some remark, and you ought to have

heard the roar. I left the table and afterwards told the boys that fruit tasted like soap, and asked them what it was. They told me they were tomatoes. I said, "No more tomatoes for me."

It was here that I first met Jane Carberry, a young Scotch girl, whom I married on the 23d of December, 1865, in Cambridgeport, Mass., and who is still living. In April, 1866, I left the Aetna Mills and went to the Assabet Mills at Maynard. The boss spinner here, Joe Bates, would not have a spinner working for him unless he could make $60 a month. We used to make from $60 to $90 a month. Soon after I reached the Assabet, the carder left and Mr. Harding took his place. Mr. Harding at that time wore a tall hat to the mill and looked about as old then as he does now. Since then he has been on the road many years for George S. Harwood & Son.

On the first of May, 1867, I left Maynard, saying that I would spin no more, and I never have. On the 6th of May I started for the West with a chum who, like myself, had married a Scotch girl. He was looking for a spinning and I for a carding job. We reached Fort Wayne, Ind., where he found work as a spinner; I left him here and I have never seen him since. Left alone, I continued my westward way, nothing daunted, and called at the different places as I went along until I reached St. Louis. I was unable to find work and started back; at Jacksonville, Ill., I found two four-set mills, Capps & Co. and the Home Woolen Co.; I called on Capps & Co. and asked one of them if he knew of anyone in want of a carder. He said, "No," but directed me to the other mill, where I found the superintendent, who was an Eastern man. He asked me if I could card rolls. I told him I did not know what they were; he directed me to another room where I could see some of them. I went in, and upon my return told him that we called them "carding" in England instead of rolls. Next morning I started work carding rolls at $2.50 per day. This was my first carding job in America. After a few weeks I took charge of wool carding and spinning and got along very well working there until the mill shut down, when they gave me first-class testimonials.

One day who should come to the mill but Mike, the fellow whom I had thrown into the Naugatuck river. He did not know me, and was much confused when I told him who I was. I gave him a job at spinning; he stayed four weeks and left; I have never seen him since. The mill closed on the 16th of January, 1868. I packed up my bag and started to see my wife and child, whom I had left in Maynard. I found the boy had grown very fast.

SAM DRIVER.

(To be continued.)

—Statistics of the German combed worsted yarn industry for several years past indicate a decadence in this branch. In the various districts around Cologne there were in the year 1895, 253,000 spindles. In 1901 this number was reduced to 185,000, showing a loss of about 27 per cent. Besides this the spinning mills around Berlin, in Lusatia, etc., have decreased about 130,000 spindles; in spite of which there has not been a single profitable year for such establishments during the period from 1895 to 1901. The reason for this, says Kuhlow's German Trade Review, seems to be that the hand-loom weaving industry and the small power-loom mills are gradually disappearing, and are replaced by large power-loom manufactories. These large mills are gradually but steadily adding their own spindles to their establishments. The export of yarns becomes smaller the more effectively foreign countries are hedging themselves with protective duties.

—Before the age of twenty we simply exist; we live from twenty to fifty; after that we survive.—Thevenot.

KNITTING DEPARTMENT

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Market.

The knit goods market has shown a steady improvement from week to week throughout the month, the latter part of June having developed particularly favorable trade conditions, owing largely to the advent of seasonable weather. The outlook for the fall trade is much more promising, and jobbers feel more confidence than at any time during the season. The settlement of the fleeced goods question has certainly had not a little to do with putting buyer and seller in a a more cheerful frame of mind.

Another meeting of leading manufacturers of fleece lined underwear was held in Albany on Saturday, June 22d, at which it was determined to maintain until August 1st the prices and terms as adopted May 7th, after which date another advance may be looked for. It was agreed to continue the present organization until the 1st of Oct., 1901, under the name of "The American Knit Goods Association." Owing to the increase of business on fleece lined underwear since the last meeting, it was agreed to remove the curtailment restrictions and to allow manufacturers to run their plants according to the demands of their business. The convention was adjourned to meet again at the Hotel Ten Eyck, Albany, on July 27th.

Some lines for the spring season are already being shown, but manufacturers and agents are backward about showing styles or making quotations. Some lines of men's plain and fancy balbriggans which the writer saw this week were quoted at from 12½c. to 25c. per dozen less than last season's prices, but whether or not these quotations will be maintained in view of the recent advance in the cotton market, remains to be seen.

Business on the cheaper grades of men's sweaters has not been as brisk

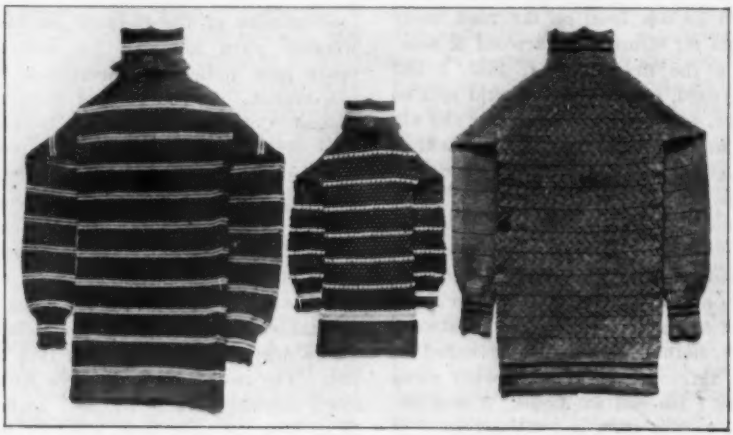


FIG. 1. FIG. 3. FIG. 2.

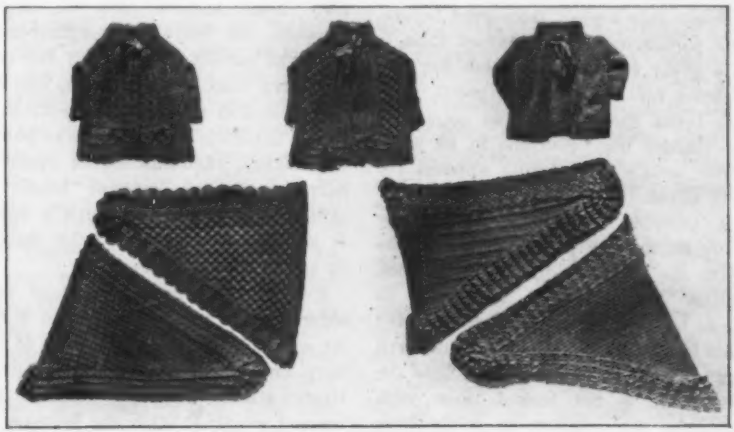
as might be wished for, but on the higher grades of fancy styles a good demand is reported both for immediate delivery and for fall.

Figure 1 represents what has proven to be an excellent seller with the better class of trade. This is an all worsted sweater knit with the "rack" stitch, which renders the garment non-shrinkable and also prevents it from stretching out of shape after washing. The color is bright red, with green stripes, bordered with white, which makes a very attractive and genteel combination. This garment, at $24.00 per dozen, is considered particularly good value.

Figure 2 is also an all worsted sweater but in a much heavier weight and of an entirely different weave. The color is French grey, with narrow red stripes, but the peculiar zigzag weave is what renders the garment particularly attractive and which has made it an excellent seller at $27.50 per dozen.

"Juvenile" sweaters, as they are popularly termed, in sizes from 16 to 24 are also in strong demand. Figure 3 illustrates one of the handsomest of these little garments that we have seen this season. The color is red, with white stripes, and the cuffs, neck and tail are striped with green. The weave is a very handsome honeycombed effect, and one of the most attractive features is the price, which is only $6.00 per dozen for an all worsted garment.

In lines of fancy knit goods such as hitherto have been imported, many of our mills are making rapid advances, as the illustrations will show. Figure 4 represents an infant's sack made of white worsted with pink and white mercerized fancy stitch trimmings, and pink satin tie ribbon at the neck. Figure 5 is also a very handsome style in an infant's sack. The ground work is white, with pattern in pale blue mercerized yarn, neatly trimmed cuffs, and blue satin ribbon at neck. These two styles have sold very well; No. 4 at $3.50 and No. 5 at $4.50 regular, while No. 6 is a plain neat pattern with delicate pink trimming, and worsted cord and tassel at the neck, has sold at $1.60 per dozen regular.



5 4 6
8 7 9 10

Figures 7, 8, 9 and 10 illustrate a line of fancy worsted and zephyr fascinators with mercerized patterns, ranging in price from $3.00 to $4.50 per dozen and which are preferred by buyers every time when compared with similar goods of foreign manufacture.

The hosiery trade is in a much better condition than at any time during

the past few months, and re-orders are being received daily in fairly satisfactory volume. Considerable business for spring has already been booked by domestic manufacturers on staple goods, at prices a trifle lower than last season. In the way of fancies, nothing radically new has been shown. Lace effects will still hold strong in favor, both in open work effects and applique lace patterns. From retail sources we gain the information that silk hose, both for ladies' and men's wear, are in stronger demand this season than ever before. The popularity of the Oxford shoe is to a great extent responsible for this demand for higher grade goods, and, this being the case, let us hope that the Oxford may continue to be a favorite article of wearing apparel for both sexes.

A peculiar feature of the hosiery trade during the past few weeks has been the sudden craze for whites. Ladies' fine silk and lisle hose in white lace and open work effects have been in the greatest demand, and even plain whites have sold well. This development is not looked upon with favor by the retailer, as white hose are very unsatisfactory articles to handle; they soon depreciate in value from being carried in stock, and the profit in the end is very limited. Children's white socks, which have been practically dead for the past few seasons, have also returned to popularity, and at the present writing fine gauge lisle and cotton socks in sizes 5 to 7½ are at a premium and are practically out of the market.

No new developments are reported from the Chemnitz market and prices are ruling about the same as one month ago. The majority of American hosiery buyers are now on the foreign market selecting styles for the coming season, and advance samples will shortly be shown.

—Flattery is like our shadows which make us neither larger nor smaller than we are.—Frederic II.

The Best Speed for Loop Wheel Knitting Machines.

(*Copyright, 1901, by Guild & Lord*).

Briefly stated the best speed is that at which the difference between the value of the production and its total cost is a maximum.

Suppose that a mill is producing 500 dozens per day, and that by increasing the speed of the machines one-fifth the production is increased to 600. The value of the production may not be increased one-fifth, for probably more seconds will be made. Suppose we estimate the increased value at one-sixth. Now, if the cost for extra help, extra needles, and extra wear and tear on the machines is below one-sixth of what it was before the change, then the higher speed is better. Another increase might be still better, and so on until a speed is reached beyond which the margin of profit begins to decrease.

Probably the most important consideration is the value of the work. At a very slow speed the drag of the yarn on the sinker burr is comparatively slight, and the stitches are formed evenly. With the increase of speed the drag increases and tight streaks are formed. If the bobbin barrels are rough or sticky or splintered, the yarn may catch and break, or it may be so retarded as to pull the sinker burr back enough to make it over-reach and cause a smash and a bad place in the cloth.

As the speed increases it is more difficult to keep the yarn in position on the sinker burr. It has a tendency to pull either up or down out of the groove, unless the guide is carefully made and set. This results in running the quarter off, and possibly in causing some needle breakage.

Tight stitches make the garment look badly, and decrease its value to that extent; a smash makes a hole any way, and makes the garment that contains it a second; and a quarter off means the loss in production of cloth turned into rags. All these

things decrease the unit value of the production although the gross value may be increased by increase of speed.

Another factor to be taken into account, and one that is closely connected with smashes, is the loss in time, in needles, in wear and tear on the machine, and in discouragement to the help.

If a smash occurs at low speed the results are less serious than at high speed, for the machine has less momentum, and consequently it will stop quicker, and less needles are broken; a serious smash may occur right behind the stop motion, in which case all of the needles may come out before the stop motion is reached; but this is an exceptional occurrence, and on the average less needles will be broken at low speed than at high speed.

Of course every smash means an increase in the needle bill, and the larger the smash the larger the increase. But it means more than that. It means roughening, bending, loosening and even breaking the burr blades. A broken blade in a modern burr is easily replaced, and a bent blade can be straightened, but a roughened blade may cause a lot of bad work before it is located, by cutting the yarn or by pulling out a long loop; the loosening of the blades is an irreparable damage to the burr, and a hidden source of future trouble.

On a 20-inch cylinder running at 60 turns per minute the burr blades travel about 444 feet per minute or 7.4 feet per second; at this speed a loose blade is dangerous.

If the machine has a trick cylinder, the tricks are liable to injury by a smash; and if it has a leaded cylinder, the leads may be tipped out of the vertical. In either case it takes time and labor to repair the damage, and in consequence some other cylinder may get into trouble for lack of proper attention. This means that, if such things occur frequently, the help will get tired and discouraged, and either the wages must be advanced or more help employed.

It frequently happens that too high speed or a lot of hard needles or soft blades will cause so much work and worry that a knitter will get discouraged and quit. This is generally disadvantageous to the manufacturer, for, other things being equal, a knitter who is acquainted with his room is of much more value than one who is not.

The class of work has much to do in limiting the speed. In general, wool and shoddy require a slow speed, backing cloth may be knit faster, and balbriggan still faster. Both wool and shoddy yarn are weak, and will not stand tension in coming from the bobbin or going into the needles. Shoddy is likely to contain sticks and lumps, and these may catch in the guide and break the yarn.

A large part of the backing cloth manufactured is made with a two-thread face, so that moderately high speed may be used for, if one face thread breaks the other keeps the cloth on the needles.

Balbriggan is knit from a hard, strong yarn, and clearing burrs are generally used so that the machines may be run at a fairly high speed.

In this connection it is of interest to note the difference of opinion regarding quarter savers. Not many years ago they were considered a necessity, but now many knitters have discarded them entirely. Some, however who used them and had abandoned them are now using them again. The general opinion seems to be that with good yarn, good winding, and ample help, the savers are not needed, but with conditions not so favorable they are needed.

The condition of the knitting machine has some influence in determining the speed of the machine. A brand new machine is rough and stiff, no matter how well it may be made, for machine work cannot give to its parts that smoothness and limberness that is acquired by actual use. Therefore a new machine should be run

slowly until the blades are polished, and the bearings are worn smooth. Then a high speed may be used until the cylinder and burrs begin to run loose; after that the speed should be reduced, for a wobbly machine can not be run fast without danger of smashes.

Now that all this has been said, what is the practical use of it? How can it be applied? Can one sit down and figure how much a change of speed will increase the production, the seconds, the needle bill, the depreciation of the machines, the labor bill, etc.? No, it is difficult to sit down and figure that all out with even approximate accuracy, but the application of what has been said may be made by keeping in mind all these causes and effects and others that will be observed, by noting the extent of them and by exercising good judgment in deciding the speed accordingly.

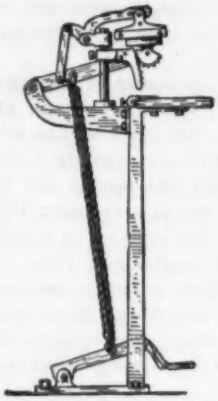
Good average practice in America is to run a 20-inch cylinder on wool goods about 45 turns, on backing about 60, and on balbriggan about 65 or 70. With these figures to start on, and with level headed observation, a superintendent or knitter should be able to judge quite closely what is the best speed for his room. S. X.

The above article written by one of the best posted men in the trade is the first of a series which will appear in the Textile World, and treats of the Spring Needle Knitting Machine. The next instalment will appear in August and treat of the production of circular spring needle machines. The series has been copyrighted and consequently will not appear in any other publication.

A New Neck Marker or Stamping Machine.

The illustration shows a new pattern of neck marker or stamping machine that is now being put on the market by E. M. Antisdel, 12 Miller St., Utica, N. Y., who is the sole manufacturer.

As the picture shows, the machine is simple in construction and easy in operation. It runs very easily, being well balanced. The foot treadle operates the head by means of a ratchet



and gear. When at rest, the marking die is up against a pad at the top. Light pressure of the foot on the treadle causes the die to make a half turn, coming down perfectly square on the garment, making a legible mark. When the foot releases the treadle, the marking die automatically turns again to its place against the pad.

If the ink pad is removed, the die will make a perfect crease.

It marks thick or thin goods equally well, and according as the operator works the treadle, it can be made to run fast or slow; indeed, the manufacturer claims that it can be run faster by foot power than any power machine on the market, if so desired.

It only weighs 100 lbs., so that it can be easily moved about and set up anywhere, while its method of operation is so simple that a child can run it.

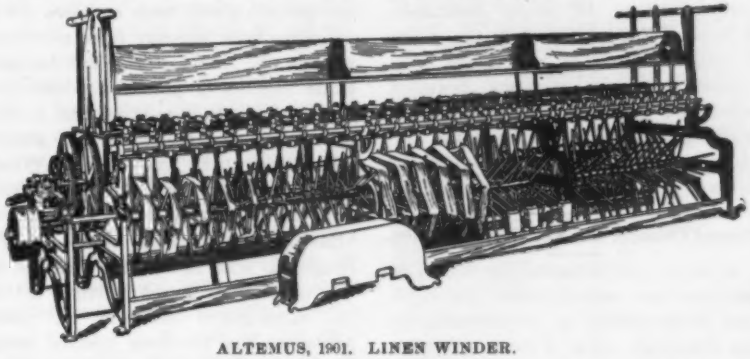
Patents covering improvements have been applied for.

—Many might be made happy with the pleasure that is lost in this world —Duc de Levis.

The Altemus Winders.

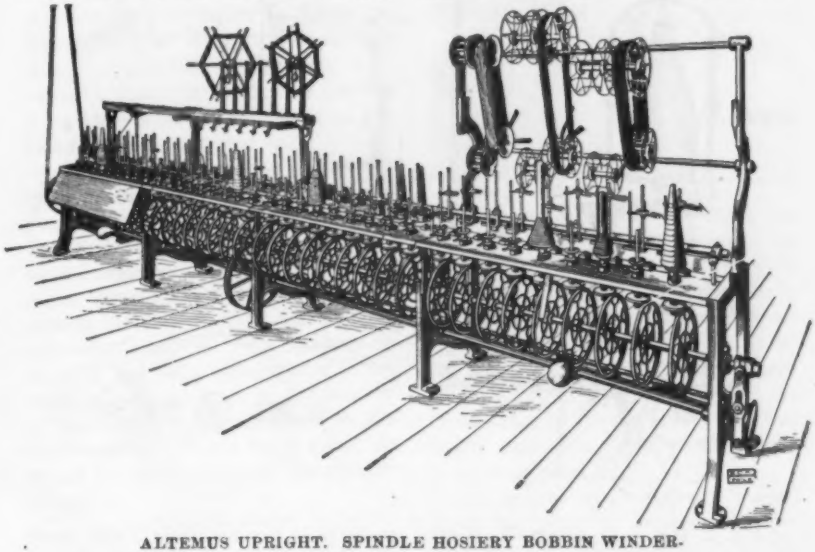
The accompanying illustration shows the 1901 patent linen winder built by W. W. Altemus & Co., 2818 N. 4th Street, Philadelphia. The high reputation of the machinery built by this firm is guarantee as to the merit of this new winder. It is a great improvement over the old style of winder. By means of a patented variable motion yarn varying from 8s to 90s can be wound direct from the skein to the shuttle bobbin. The work of this machine in many mills throughout the country warrant the builders in claiming that it will wind yarn as hard as is desired. A cleaner is attached to remove the loose fibres and waste. The machine can be operated at high speed which results in a large production.

We illustrate also, the Altemus upright spindle hosiery bobbin winder.



ALTEMUS, 1901. LINEN WINDER.

This machine is provided with a variable motion and winds direct from the skein; either pin, barrel or wire swifts can be used with cleaner guides attached to wind from the cone with friction and cleaner guides combined



ALTEMUS UPRIGHT. SPINDLE HOSIERY BOBBIN WINDER.

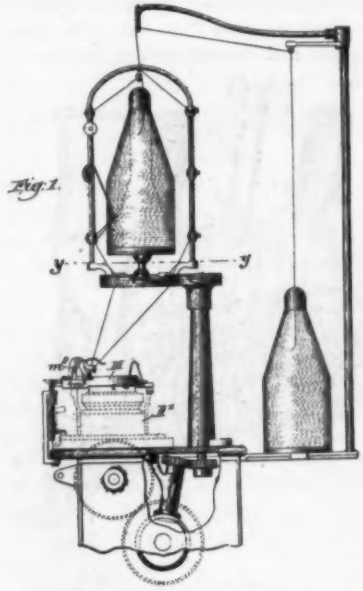
No bands are necessary as the spindle is driven by friction. The former guide is light and of the latest improved pattern. It is quick in action in finding its place where breaks occur and in tying up to prevent bad

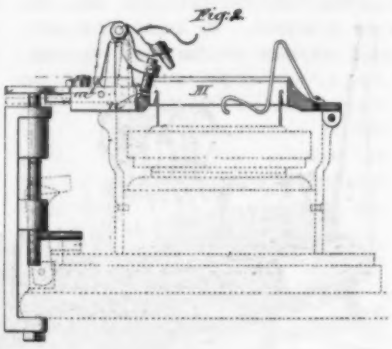
bobbins and damage to the guide. The knock-off finger stops the bobbin as required. The new style of bobbin used is constructed so as to prevent friction or breaking of the ends while winding the yarn.

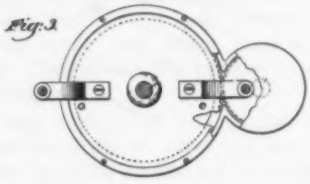
In addition to these machines, Messrs. W. W. Altemus & Co., build bobbin winders of all kinds, cop winders, spoolers, warpers, beaming machines, and in fact a full line of warping, winding and spooling machinery which is well and favorably known to textile manufacturers.

Thread Changer for Knitting Machines.

A device for changing the thread in knitting has recently been patented, and is illustrated by the accompanying drawings. Fig. 1 is an elevation and partial section of a knitting machine equipped with the changer; Fig. 2, an enlarged plan of a portion







of Fig. 1; Fig. 3, an enlarged horizontal sectional plan, taken on the line y y Fig. 1.

The cam-cylinder A^1 is provided with suitable supports for the latch-guard M, which necessarily rotates with the cam-cylinder; the latch-guard or a laterally-extended portion m^1 being provided with a suitable standard m^2, (see Fig. 2), to the opposite sides of which are pivoted the two threads or yarn guides shown as adjustably mounted on the arms.

These thread-guides have swinging movements about their common pivot to carry their threads from positions outside the circle of the knitting-machine needles to positions within the circle of the said needles, and to impart such movements to the guides there have been provided carrying-arms, with notches or pockets which receive the upper ends of vertical arms of thread-guide actuators, arranged to slide in suitable bearings in the laterally-extended portion m^1 of the latch-guard referred to, these actuators for the best results being preferably connected for concordant movement by a beam fulcrumed and forked at its ends to engage pins or projections, rising from these actuators.

When either one of these actuators is moved inwardly or to the right (see Fig. 1), its vertical arm referred to will engage its notched thread-guide arm and move the same to its innermost position, with its thread-guide

within the circle of the needles, and at the same time, through the beam, the other actuator is moved in an opposite direction, causing its vertical arm to engage an opposite wall of the notch of its guide-arm and move the latter outwardly to carry its thread-guide to a position outside of the circle of the needles.

It will be noticed by reference to Fig. 2 that when the vertical arm of either actuator is moved outwardly to carry its connected thread-guide from within to the outside of the circle of needles the said arm will, after having given a complete movement to its thread-guide arm, pass in its further movement beneath the locking-surface mx on the hub of the guide-arm, as in Fig. 2, and as the said locking-surface, as herein shown, is flat it co-operates with the flat or squared upper end of the said vertical arm to lock the said guide-arm against movement in either direction from its said position.

Suitable stops 5 are provided for limiting the movements of the respective guide-arms as they arrive in their operative position, the latter in their swinging movements working through a suitable notch or opening n in the ring-like guard referred to.

In the normal operation of the machine the carrier-wheel, carrying the yarn and the yoke move in unison with the cam-cylinder of the machine, such movement preventing any twisting of the threads employed, and permitting the threads to be continuously connected with the work whether or not they are being incorporated in the work, the change from one to another of the threads for putting one or the other thereof into the work being effected by the shifting of the thread-guides.

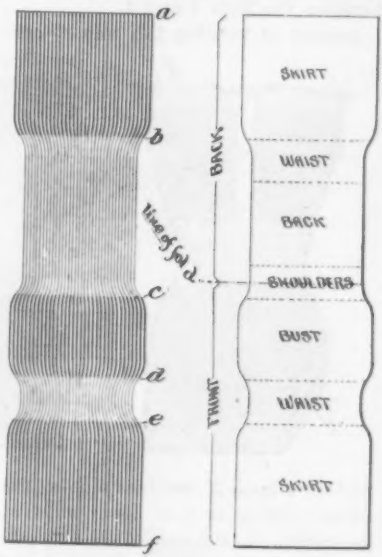
—We are judged, not by what we are, but by what we appear to be.—Delpit.

—A comforting thought: the evil that we fear and the joy that we hope for are alike; one does not arrive oftener than the other.—d'Houdetot.

Lady's Knit Undergarment.

The accompanying illustration shows a method of knitting corset covers and women's undervests by a combination of loose and tight stitches so as to give a good fit.

The inventor states that he knits a web upon a circular knitting machine; this web when slitted open longitudinally appears as in Fig. 1. In the production of this web, supposing



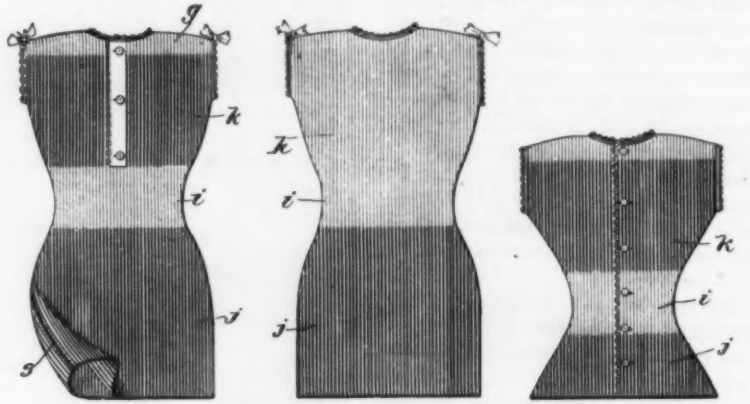
that we begin at the top along the line a, it may, in order to make the web relatively wide, be knitted in loose or open stitch to the line b; to the line c it may be knitted in close or finer stitch; from the line c to the line d it may be knitted again in loose or open stitch; from the line d to the line e again in close or fine stitch, and finally from the line e to the end f in open or loose stitch.

This fabric, when properly shaped along the edges by cutting or otherwise, may be folded a little above the line c, that is, on a line corresponding with the "line of fold" in Fig. 2, the edges sewed together and the fabric otherwise finished to form a complete garment.

In Fig. 2 the parts that will fall

into particular portions of the garment are so marked, for instance, the end portions knitted in open stitch, as from a to b and e to f, will form the skirt, and the close-knitted portions between the lines d and e and corresponding lines below the line b will form the waist. This will leave the bust between the lines c and d quite full, while the shoulder portion and the back will be narrowed or without the fullness that will exist between the lines c and d.

Instead of knitting the web shown



in Fig. 1 upon a circular-knitting machine, slitting it open longitudinally, developing it, and subsequently shaping it by cutting and seaming the same web may be knit upon a flat or straight knitting machine, fashioning or shaping it as the knitting proceeds, so that all that will be necessary to finish the garment will be to fold it on the line of fold indicated in Fig. 2, looping it or seaming it along the sides, as at s, finishing the neck and sleeves or arm-sizes and the opening in front as may be desired.

Knitting the web upon a circular machine is mentioned only because it can be produced upon such machine perhaps more rapidly and economically than upon a flat or straight machine; but when knit upon a flat or straight machine the fabric should be fashioned, as before stated, as the knitting proceeds, forming selvaged edges which may be subsequently looped or seamed together without forming so coarse a seam as it is necessary to make in the manufacture of what is commonly known as "cut" goods—that is, where the fabric is cut and shaped after knitting.

In all cases, whether it be an undervest, a corset-cover, the vest portion of a union garment, or other article of apparel, the fabric that is to compose the shoulder portion g, the back h, and waist i, is formed so that it shall be narrowed or without fullness, while the skirt j and the bust part k are knitted so that they, and particularly the bust part, shall have greater fullness than the other parts in order that no surplus fabric may be contained in the shoulders and back portion of the garment, which is the part that has heretofore been seriously faulty and has interfered with the fit of the gown.

As before stated, whether the fabric is knitted upon a circular machine or upon a straight machine or whether it is cut and seamed together at the edges or knit with selvaged edges, so that the said edges may be looped together, the edges are looped or seamed along the sides s, as is perhaps most clearly shown in Fig. 3, where one corner of the skirt of the undervest is shown as slightly folded over. Fig. 4 is a back view of the same. Fig. 5 is a front view of a cor-

set-cover embodying the invention, the back of the same being substantially the same as that shown in Fig. 4, excepting that the skirt is shorter.

Machine for Running on Knitted Fabrics.

The accompanying diagrams illustrate a machine for running on knitted fabrics, which has recently been patented. The inventor states that ordinarily tubes of ribbed fabric intended to form the tops of half-hose or the legs of stockings are produced in a machine which forms in each tube a series of courses, each containing a bunch of threads and called a "welt," these welts being separated from each other to the extent of the desired length of the ribbed top or leg, and adjacent to each welt is formed a course composed of longer or slacker stitches than those in the body of the fabric, this "slack course" being the one which is intended to be run upon the needles of the machine for knitting the half-hose or foot portions onto said ribbed tops or legs.

This running-on operation is usually performed by hand, the operator picking stitch after stitch of the slack course onto the successive needles of the needle-cylinder, there being, of course, as many stitches in said slack course as there are needles on the cylinder of the machine. This method of running on the fabric is a tedious and expensive one, and the aim of this invention is to provide a machine which will render it unnecessary.

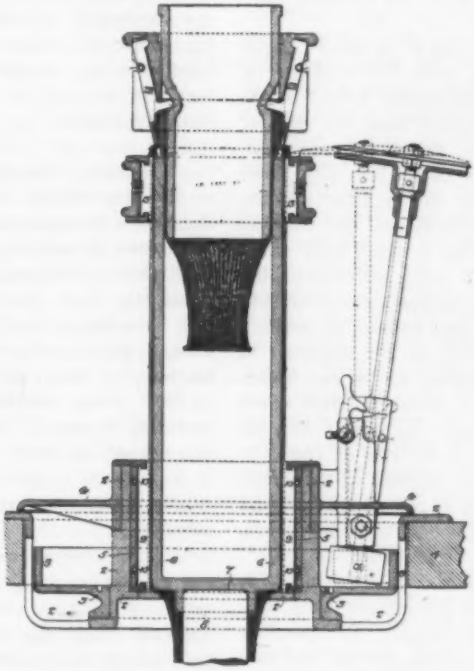


FIG. 1.

Fig. 1 is a section of the complete machine; part of a table is represented at 1, and to this is secured a structure 2, which provides a bearing for a friction driving pulley 3, for a ring 4, and for a cylinder 5, said structure 2 also providing a rest or support for an internal cylinder 6, which has at its lower end a socket 7 for the reception of the upper end of a rod 8, upon which the tube of ribbed knitted

fabric comprising the successive ribbed tops or legs is run preparatory to its application to the machine.

The cylinder 5 is slotted radially for the reception of a number of radially-guided bits or plates 9, one for each of the ribs of the knitted tube, these bits being pressed inwardly or toward the cylinder 6 by the action of surrounding coiled springs 10, and their movement being restricted within certain limits by ribs on cap-plates 11 at the ends of the cylinder 5, these ribs engaging with the recessed ends of the bits 9.

The ribbed fabric is drawn from the rod 8 up over the cylinder 6, which is by preference ribbed externally to correspond with the ribs of the knitted web, the ribs of the cylinder alternating with the bits 9, so that the ribs of the cylinder will enter the spaces between the ribs on the inside of the knitted web, while the bits 9 will enter the spaces between the ribs on the outside of said knitted web. The ribbing of the cylinder 6, however, is not essential to the proper carrying out of the invention, the bits 9 being in most cases sufficient to effect the proper disposal and guidance of the ribs of the knitted web on the outside of the cylinder 6 by reason of the registry of said bits with the spaces between the ribs on the outside of the web.

It will be evident that the machine constructed in accordance with this invention will perform the operation of placing in position for the entrance of the points of the receiving-fingers 23 the stitches of the slack course of the knitted web by uniformly spacing said stitches for the entrance of the points of said fingers, this uniform spacing being effected by the action of the bits 9 and 13, which are caused to register with the spaces between the external ribs of the fabric as the latter is drawn up over the cylinder 6.

The use of the lower set of bits may be dispensed with in some cases and the upper set of bits 13 relied upon for effecting proper registry of the ribs of the fabric, or the reverse arrangement may be adopted, although the use of both sets of bits is preferred. Fixed bits may also be employed, if desired, instead of the radially moving and spring-actuated bits which have been shown and described, the use of the latter, however, providing for inequalities in the thickness of the fabric, and for this reason being preferable to fixed bits.

In some cases, also, the fingers 23 may be grooved, in a manner similar to the points of a transfer-ring, and the stitches of the slack course may be transferred directly from these fingers to the needles of a knitting-machine without the intervention of the transfer-ring.

—The representatives of thirty-seven of the largest knit goods mills have decided to continue the temporary organization formed a short time ago until Oct. 1, 1901, and to name it the American Knit Goods Association. The association has decided to maintain the prices and terms of the schedule adopted May 7 in effect until Aug. 1, 1901, when another advance will probably be made. Owing to the increased call for fleece-lined underwear it was urged to allow manufacturers to run their plants as their orders demand.

—A cloth singeing device has been patented in France by which, it is claimed, goods are thoroughly singed by running once through the machine. The fabric passes over a number of thin, hollow plates kept cool by a circulation of water. These plates are arranged so as to bring a number of folds of the fabric in contact with one jet of flame.

—It is rare that the partisan does not meet the fate he has brought upon others.—Mignet.

—Do not disclose your plans that you may not be subjected to ridicule in case they miscarry.—Pittacus.

American Made Full Fashioned Knitting Machinery, (Cotton System.)

It is only within a few years that full fashioned hosiery has been successfully manufactured in this country. Very gratifying progress, however, has been made in this industry and at the present time this class of goods knit in American mills forms an appreciable part of the quantity consumed. It is very gratifying to note that American enterprise has succeeded not only in manufacturing these goods on foreign machinery, but also in building the machinery itself.

A year ago the Textile Machine Works of Reading, Pa., commenced work on full fashioned hosiery machinery, which had not been previously made in this country, although a good many machines of this kind were imported, principally from Germany. Encouraged by the demand for these machines by some of the best mills in their locality, these builders equipped a large machine shop covering 20,000 square feet of floor space with the most improved machinery and built an up-to-date foundry.

They now report that they have been exceedingly successful with the machines so far turned out. They are pronounced by all experts as not only equal, but superior to those made by the best builders on the other side. The machines built by the Textile Machine Works are heavier and more accurately built; all parts are made interchangeable. This company is now prepared to take orders for delivery during the summer and fall, and is at present making shipments at the rate of one machine per week.

All machines are thoroughly guaranteed, and will be placed in the mills of responsible manufacturers subject to trial, and no payment is asked for unless the machines prove entirely satisfactory.

—The true joys are those which either weep or are silent.—Cherbuliez.

Knit Goods in Brazil.

The Milan, Italy, Chamber of Commerce has issued a report on the knit goods trade in Brazil, in which they state that large quantities of knit fabrics are consumed and very little is manufactured there. There is one mill at Rio, another at St. Paul, and a third one of small capacity at Port Alegre.

The wealthier class of Brazilians usually wear a light wool flannel waistcoat. The working classes wear cotton knit goods jackets of a gray color, both with and without collars, but with a watch pocket and a cord at the neck for drawing the garment together. At St. Paul the demand is mostly for cotton flannel waistcoats, the bulk of which are black and weigh about 6½ lbs. per dozen. These are imported largely from Italy. The finest grades are unbleached and manufactured in Germany. They are double breasted, the sleeves provided with cuffs, and a wide band at the neck. These goods are of strong texture, although even the largest sizes do not weigh over 2¾ lbs. per dozen.

There is but little demand in Brazil for knit underwear. It has recently come into use for cyclists. The case is different with knit hosiery, of which large quantities are consumed; 400,000 or 500,000 dozen of cotton hosiery are imported annually into Brazil and the bulk of this quantity comes from Germany. Not over 3 per cent. of these are woolen, the balance being almost wholly cotton; very little silk hosiery is imported.

Men's Ribbed Union Suits.

There was a time when the union suit was looked upon as an article of clothing designed exclusively for women's wear, but of late years the popularity of this garment for men's wear has been gradually increasing, until at the present time no up-to-date haberdasher's store or men's furnishing department is complete without a

full line of men's union suits in light, medium and heavy weights, according to the season.

A well made and well proportioned union suit is about as comfortable a garment as any man could wish to wear, but an ill-proportioned suit will occasion far greater discomfort than an ill-fitting two-piece suit of underwear. The greatest fault that the retailer complains of in this respect, is the tendency of manufacturers to make their union suits too long. As the result of years of experience and careful experimenting one of the oldest and best established manufacturer of this class of goods, whose trade mark is known throughout the country wherever underwear is bought or sold, has adopted the following standard of measurements, which he claims is as nearly correct as it can possibly be made.

Size	Extreme Length	Length of Body	Leg Inseam	Width of Body
	Measurements in Inches.			
34	54	28	26	14
36	56	29	27	15 to 16
38	58	30	28	15 to 16
40	59	30	29	16 to 17
42	60	30	30	16 to 17
44	61	31	30	17 to 18
46	62	31	31	17 to 18

Sizes 48, 50 and 52 being "out sizes" are made in the same lengths as 46, the only difference being in the girth. The same average sleeve lengths are used as in ordinary ribbed shirts.

UNION.

A New Striping Attachment.

The demand for striped hosiery has stimulated the improvement of machinery to meet the wants of manufacturers. The problem has been a difficult one to solve satisfactorily without producing a machine that is so complicated that the ordinary operative finds it difficult to run it, and the ordinary knitter and fixer to keep it in order.

The American Knitting Machine Co., builders of the "New" Victor automatic machine for seamless hosiery, have recently completed and are now putting on the market a striper in which simplicity of design and construction have been an important feature aimed at, and recent inspection of the machine justifies the

claims made for it in this connection.

The general appearance of the machine with the attachment applied differs so little from their regular machine that an illustration of it would convey little understanding of its operation. What the manufacturer

is most interested in is the work that it produces, and this is fairly shown in the illustration herewith. This stocking was knit for the purpose of illustrating the adaptability of the machine for narrow and wide stripes knit at pleasure by fixing the pattern chain, according to width of stripe desired. A single course can be knit in, or a wide stripe knit, as desired. There is no stopping of the machine, which does its work automatically, just as the regular machine does. The splice is made neatly, and this feature of the work compares favorably with anything of the kind we have seen.

One feature that will commend itself to manufacturers is that the striping attachment may, if desired, be thrown entirely out of action or disconnected altogether, and the machine run as a plain machine, when that class of goods is called for. This is an important point, for a manufacturer gets the advantages of two machines in one, without, however, having to pay the cost of two separate machines, nor giving up the space that they would occupy.

The striping machine is built in the same thorough manner as the regular Victor machine, and has all its good points.

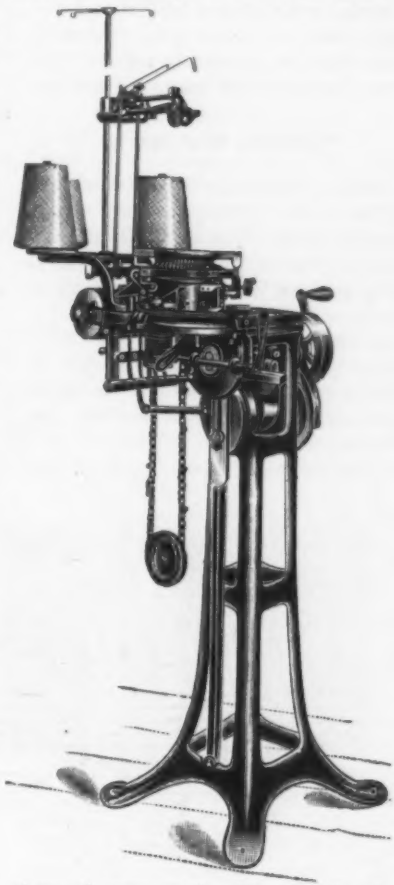
The main office of the company is now in the Knickerbocker Bldg., Sixth and Arch Sts., Philadelphia, where correspondence in relation to it should be addressed.

The Brinton Full Automatic Seamless Hosiery Knitting Machine.

The accompanying illustration is that of the Full Automatic Knitting Machine manufactured by H. Brinton & Co., 213 Race St., Philadelphia. It is adapted for knitting men's, women's, children's and infant's hose, or for footing ribbed hose of any description.

The machine has but one measuring chain. The method of changing the adjustment in order to alter the size or length of a stocking is very simple, and consists simply in changing the length of the chain. It is not necessary to remove any screws, and the change can be made while the machine is in motion.

The machine is so constructed that a reinforcing thread can be inserted in the heel and toe, and the stitch of heel and toe can be automatically loosened to adapt it to the different



sizes of yarn used. The length of stitch can be automatically regulated at any part of the stocking, and the gauge of the machine can be altered simply by substituting either coarser or finer cylinders.

The machine is well mounted on a strong base, and is subject to but little vibration. All of the motions are

positive, and the gears are well covered. Only one belt is required, which can come from below or above as desired.

Further information in regard to this machine may be obtained from the manufacturers, who build a full line of circular rib and seamless knitting machinery, both plain and automatic, for knitting hosiery, shirts, drawers, tights, combination suits, skirts, jackets, caps, bicycle and athletic suits, etc. This line of machinery has been extremely popular with the trade and is in very extended use.

Crinkled Knit Fabric.

The accompanying illustrations (Figs. 1 and 2) show a method of producing ornamental, crinkled or wave-like effects on knit goods without, as the inventor claims, any increase of cost.

Figure 1 is an enlarged view of a fabric made in accordance with the invention; Fig. 2 is a diagram representing a knitting-machine for producing the fabric.

The main distinction between this and an ordinary fabric is that the knitted wales instead of being straight are waved or zigzag. Thus, as shown in Fig. 1, the wales change their direction with every four courses of stitches, thereby imparting the crinkled or wave-like appearance to the fabric and providing for the production of many attractive effects, especially when plain knitting, such as represented at 1, is alternated with rib-knitting—as represented at 2.

The zigzagging or irregular course of the knitted wales is produced by supplying the yarn-feeders of the machine with yarns, some of which have a right-hand twist and others a left-hand twist. Thus in producing a fabric such as shown in Fig. 1 any form of rib-knitting machine may be used, which is constructed to produce alternate bands of plain and ribbed fabric, and having eight feeders (represented, respectively, at 3, 4, 5, 6, 7, 8, 9, and 10); a group of four successive feeders—say those represented at 3, 4, 5, and 6—receive the yarn having a right-hand twist and the other group of feeders, 7, 8, 9, and 10, receive the yarn having a left-hand twist, so that four successive courses will be inclined in one direction and the next four successive courses will be inclined in a reverse direction.

Each group of feeders with like twisted threads may comprise more or less than four, or single feeders may replace the groups, depending upon the pattern required, and any desired combinations of plain and ribbed work may be employed without departing from the invention, or the fabric may be wholly plain or wholly ribbed, if desired.

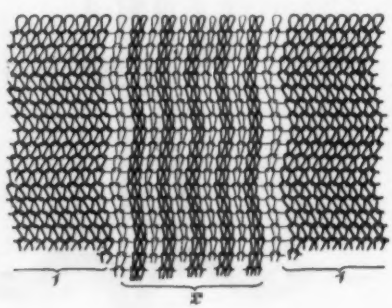


FIG. 1.

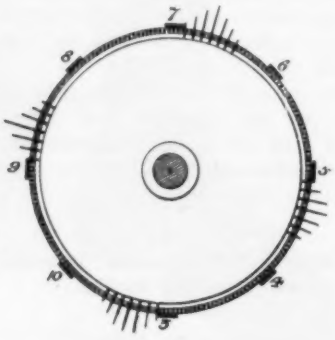


FIG. 2.

—All things are paltry, even those which appear sublime. It is merely a question of degree.—Thiaudiere.

COTTON DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Imperfections in Weaving.

ARTHUR DYSON.

ARTICLE II.

In the May issue we illustrated a few of the imperfections in weaving caused by "slugs" and bunchy yarn, and explained some of the causes which tend to bring about such defects; we will now follow the same trouble a little farther. There is no loom in a mill where so much trouble can be caused to the weaver as in the warping room; and many of the imperfections in the cloth can be directly traced to this department.

To any one who knows the results in the weave-loom, it seems worse than carelessness for a warper-tender to "blow-off" the cotton fibre and dust which has accumulated on the machine, except when the beam is ready for changing. I recently saw such an act performed, and the machine was allowed to continue at its usual speed, thus allowing the waste to become entangled with and adhere to the yarn; when this lump is carried through the size-box it is so firmly attached to the yarn that it is practically a part of the thread, and can be removed either by the weaver, or in some cases is loosened by the action of the reed in the loom, and causes an imperfection in the cloth which must be removed; no modern improvement of the loom can obviate this trouble.

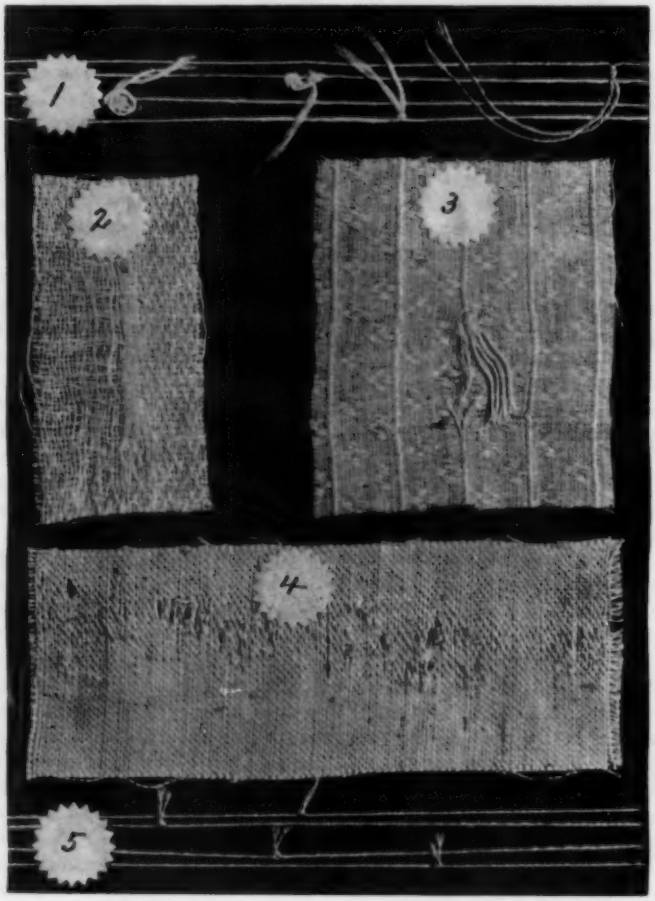
In Fig. 2 we see what havoc one of these lumps will make in a pattern which must be perfect to pass muster. Fig. 4 shows the effect of too much size on the "outside" of the yarn, the filling cannot be beaten up by the reed when the lay of the loom is brought forward. Instead of the filling being laid in a straight line, it is held by the lump of size, and one of two results follow; either the filling is drawn out of line by the yarn, and makes a perceptible hole, or the yarn is caught by the reed and stretched, thus making a loop in the yarn and causing the cloth to have a very rough appearance.

This imperfection is not so objectionable in some "cloths" as in others, depending upon the use to which the goods are to be put; but in cotton "suitings," "Khaki," "Bedford Cords," "Piques," etc., this imperfection is fatal to the sale of the goods as first quality merchandise. The remedy for this trouble lies in the "slashing" room, and if the proper attention is given to the mixing of the size and its condition while the yarn is passing through the size roll, it is safe to say that these hard spots can be entirely prevented.

Of course, some varieties of size are more apt to cause this trouble than others, owing to the different ingredients which compose the preparation, and the amount of "size" preparation used to a certain quantity of water, which is controlled by the necessity of having the yarn in a condition to stand a large amount of chafing in the loom; but, if the man in charge knows his business thoroughly, and mixes his size with "brains," he can produce an article which will impregnate the yarn, making it able to stand any reasonable amount of "wear," and still be soft to the touch.

Very often the poor results in the size room can be attributed to the manager of the mill, who will persist in buying some cheap preparation against the advice of the overseer, ignoring the fact that only those firms which make their goods under

the supervision of a practical chemist can guarantee the results to be attained. I know of one mill where they were getting good results from the use of a certain size preparation; the weave-room was running as well as anyone could wish, and the help were satisfied with the conditions which existed. But alas! some "drummer" persuaded the manager that the size used was capable of being improved upon. What was the result? A decrease in production of 30 per cent., discontent in the weave-room (the overseer of which resigned), and a general demoralization of the concern.



Another place, where I was in charge of the slashing, we were constantly forced to change the size used, and for a short time I could not understand the reason. Ultimately I found that the manager was getting "samples" from the different concerns, and thus in a measure keeping the cost of the size down, but losing more than he gained by the bad results in the weave room.

Fortunately, such instances are rare, and only serve to show the wisdom in using an article which will not only cover the yarn with an outer covering of size, but will also soften and give it a smooth feel, so that the yarn will be stronger after sizing than before. Turpentine is valuable as a help in certain cases, and when a very smooth surface is desired it is

advisable to use some paraffine wax in the boiling.

A piece of wire shaped something after the style of one of the old-time toast forks should be given to each slasher-tender, and an imperative rule made that, as soon as any sign of a scum appears in the size-box, it must be removed by means of this fork, thus preventing its becoming attached to the yarn.

At Fig. 3 we see an imperfection caused by the presence of a large spoolers' knot on the yarn, causing the filling to be held by the knot on the yarn, thus breaking the filling, and making a hole in the cloth. Unfortunately, spooler tenders are a class of help that cannot be dispensed with, and therefore we have to make the best of what is a great evil in the weave-room, viz., knots.

At Fig. 1 we illustrate four specimens of imperfect knots which cause so much damage in the goods; they speak for themselves. Some mills have adopted a system of compelling their spinning room help to make weaver's knots, paying them a little more for the extra time and trouble taken; other mills have gone so far as to pay the weavers extra for extracting these large knots from the warp before they are woven into the cloth. Another device, which is coming into general use to reduce this evil, is the mechanical knotter, such as the "Barber," by means of which the knot is tied and cut off, leaving only a small amount of the yarn protruding at the knot. Such knots are shown at Fig. 5.

Imperfect knots cause much damage by getting entangled with other threads, and thus compelling the weaver to lose time by having the loom stopped while repairing the damage done. Of course, a good proportion of the knots can be eliminated by the use of such methods as described above, and also by the working in of a better grade of cotton.

The Manufacture of Velveteen.—II.

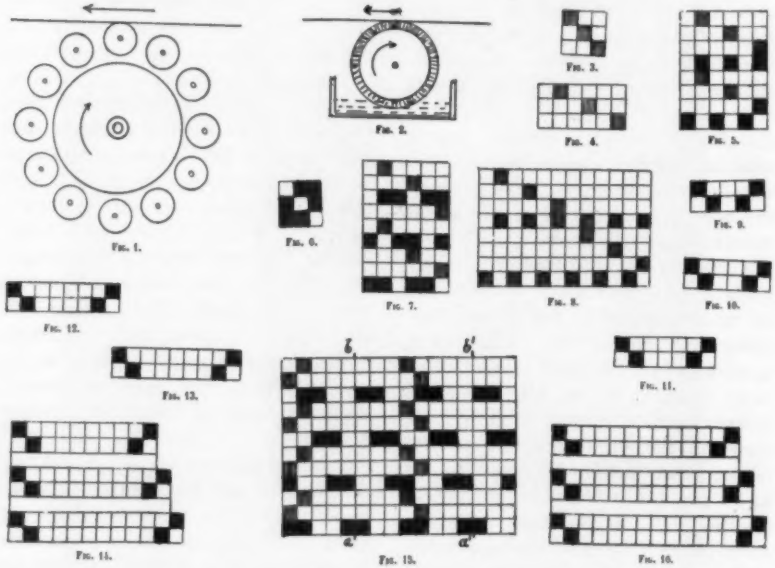
It is an error to assume the cutting velvet by machine has entirely displaced hand work. The various machines are used only on certain special fabrics, particularly ribbed velvets. The finishing of these goods previous to cutting consists of three processes: 1, Drying; 2, Napping; 3, Sizing.

The goods are dried by passing them over hollow cylinders heated by steam. They are then napped for the purpose of giving them a more bulky handle, and at the same time making the back of the goods softer. This operation impairs the strength and solidity of the fabric more or less, and is not employed on the lower qualities. The napper used for this work, (shown at Fig. 1), consists of a large cylinder, around which are arranged a number of smaller rolls, covered with card clothing. The cylinder and cloth revolve in the opposite directions, and it is usually necessary to pass the goods through the machine several times, in order to obtain the proper finish.

The sizing consists in sprinkling the face of the goods with milk of lime. On account of the rapid drying qualities of this material, it is possible to secure a very uniform cutting of the surface. The piece passes with the face down, over a circular brush, which dips into the milk of lime, as shown at Fig. 2. This application of milk of lime is not necessary where the goods to be cut are heavy and of a solid texture.

The cutting machines may be divided into two classes; one provided with molettes, and the other with knives. The molettes consist of steel disks, perfectly alligned and sharpened. These are fixed on a shaft which revolves about 3000 turns per minute, and the number of disks depends on the number of stripes or ribs to be cut. The molettes being free on the shaft, are guided by a small iron

triangle. To cut a piece, the guides are placed on the hand, and then the cloth is turned by cylinders as the cutting progresses. With this machine, if the guide punctures the piece by accident, it produces but a small hole, and the guide forms an electric connection with a plate under the goods, which stops the machine instantly. The use of these molette machines is restricted entirely to



ribbed velvets. They are open to the objection that they do not make as good a pile as by hand work.

The knife machines may have one or more knives. The knives and guides are similar to those employed in the hand machine, but are shorter. The knives are mounted on springs and held by the hand of the operative, and the least accident makes an electric connection, by which the operation is stopped. The cutting is done by sections of six or twelve yards at a time; commencing at the left, one or more strips being cut at a time. These machines provided with a single knife will cut velveteens which it is impossible to cut by other methods.

The knife machines working somewhat on the principle of a planer, require really the hand of the operative to hold the knife in position, and for this reason are tools rather than machines. For the machines with more than one knife, it is necessary to have special tools and workmen for the manufacture of guides and the sharpening of the blades, and if the tools are not very accurately set, the goods show a barry or streaky effect which is very undesirable. As the cutting is done by lengths of six or twelve yards, it frequently happens that a few yards remain uncut at the end of the piece, which must be cut by hand. Taking into consideration the power, (about 2 H. P.) and the help required, it is seen that the mechanical cutting is not always the most economical.

Some time ago, we called attention to the process brought out by Wilke, Schott & Broom, by which the cutting of velvet was done on the loom as fast as the goods were woven, but this process is not practicable, as the subsequent napping of the goods destroys the pile.

The various kinds of velvet can be divided into three classes: 1, plain velvets; 2, ribbed velvets; 3, figured

goods. The plain velvets are known under the name of velveteen, and according as the binding weave is of the plain or a serge weave, as shown at Fig. 3, they are called lisse or croisee. The filling threads intended for the pile are stitched by a serge weave, as shown at Fig. 3, which is spread over the texture, as shown at Fig. 4. The smooth velveteen weave is shown at Fig. 5, there being one thread of the binding weave for three threads intended for the pile. Fig. 7 shows the weave for the velveteen croisee. Here, the pile weave is a serge, as shown at Fig. 3. The back of the velveteen croisee is formed by a serge weave, as shown at Fig. 3, but with a twill running in the reverse direction from that of the face. Fig. 8 shows the weave for a smooth velveteen, called "Haute-verge," in which the pile is much longer. The pile weave in this fabric is shown at Fig. 6. These velveteens "Haute-verge" are generally made with the weave shown at Figs. 5 and 7, but in using these textures a softer fabric is produced.

Fig. 15 shows the weave used for goods called half-ribbed, or Raglan. Here, the cut threads are raised along the lines A B and A^1 B^1, the distance covering eight warp threads. The ribbed velvets are classified according to the length of this space. In the ribbed velvets, called "cannele," the pile threads are stitched according to the draft shown at Fig. 9 or 10. The pile covering either three or four warp threads. Ribbed velveteens with the pile covering five warp threads, (Fig. 11) are called "kinscord." Those with a pile covering six threads, woven by the weave shown at Fig. 12, are called "cordelets." The half-ribbed velvets, woven with the weave shown at Fig. 13, are called "jonc." The ordinary half-ribbed velveteens are stitched according to Fig. 14, with the pile covering eight, nine or ten threads; the complete chain draft for the first is shown at Fig. 15.

Fig. 16 shows three weaves used for half-ribbed velveteens, with the pile slightly longer than the ones already mentioned, and covering 11, 12 and 13 warp threads, respectively. Fig. 18 represents a transverse section of two filling threads in the half-ribbed velveteen fabric woven as shown at Fig. 15. The points represent the warp threads, and the continuous lines the filling threads intended for the pile.

Fig. 19 represents a transverse profile of the same threads after having been cut. After the goods are cut, as shown at Fig. 19, the face of the fabric is subjected to a singeing process. In order to obtain a round rib, as shown at Fig. 20, it is necessary to brush the fabric crossways of the rib, by which means the pile is rolled or rounded. The velvets are heavily gummed or sized, are then extracted to remove the surplus material, leaving such quantity as is deemed sufficient by the cutter. Velveteens are finished in various ways. The smooth goods intended as a substitute for silk velvet are passed through a lustreing machine, by which the fabric is waxed; the goods are then brushed well, both lengthways and crossways, which gives them a brilliant appearance.

Fig. 21 shows a weave called "corded rib," in which every other pile thread is stitched twice. Fig. 23 is a weave used for half-ribbed "jonc" velveteens, with each pile thread stitched three times. The standard grades of velveteens are; smooth goods, the velveteen croisee, the half-ribbed (Fig. 15), and the corded ribbed. The other kinds are used in but very limited quantities. There are other plain velvets besides the ones already mentioned; Fig. 25 shows a weave used for one of them. The velvet threads are stitched by five-leaf satin shown at Fig. 23. The stitching is distributed over the weave as shown at Fig. 24. The binding weave is a five-leaf serge, Fig. 25. Generally, the same kind of yarn is used for the binding threads, as employed for the pile threads, in order

to avoid the use of more than one shuttle.

The velveteens now in vogue are made in various weights, according to the quality, varying from 5 to 18 ozs. per yard. The goods are woven about 32½ inches wide, in order to give a width of about 28 inches after coloring. (The number of warp threads per inch varies from 50 to 75; the filling is much more closely woven, the picks varying from 228 to 330 per inch.)

shows the ordinary effect, while Fig. 26 shows the pile produced by what is called the "Puebla" cut; every other rib being smaller than the one between. This effect can also be produced by hand work. Some workmen cut two ribs at a time, by using a machine with two knives, which are inclined at an angle. The Puebla cut can also be made by the machine cutter. This is effected with molettes, by having the guides made of unequal size.

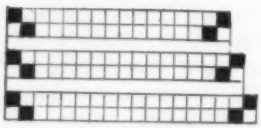


FIG. 17.

FIG. 18.

FIG. 19.

FIG. 20.

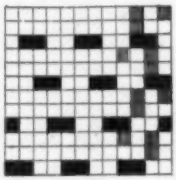


FIG. 21.

FIG. 23.

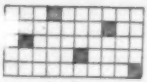


FIG. 24.

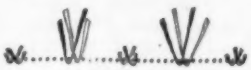


FIG. 25.

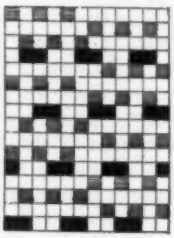


FIG. 22.

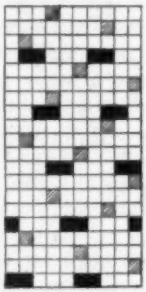


FIG. 26.

These goods are printed, as well as colored, and for furniture use are figured. This figured effect is produced by passing the goods through cylinders. The design is cut on the upper one, which is iron; this cylinder is heated. The lower cylinder is smooth, and made of wood. The cloth passes between these cylinders, and being subjected to heavy pressure, the design of the upper cylinder is printed on the velvet.

The "Puebla" effect produced by changing the inclination of the knife at each cut, first turning it to the right, and then to the left. This produces an effect very different from the ordinary straight cut. Fig. 20

In addition to the various effects produced by different methods of weaving, coloring, printing and diagonal cutting, other effects, such as panels, stripes, etc., can be produced by any one of the following four methods: (1) The design is formed by cutting the pile and having the groundwork uncut; (2) the groundwork is cut and the figure uncut; (3) Pyrogravure, or burning in the velvet; (4) painting.

The first two methods consist in first tracing the design on the velvet with a crayon, and then the cutting is done as required. This is a long and tedious process, but is much used for ribbed effects. For decorating by the

third method, called Pyrogravure, the workman takes a platinum point, raised to a red heat, and passes it over such parts of the velvet that he desires to burn off; a sharply defined clean cut design is made, and by practice the operator can produce two or even three different shades by burning more or less of the pile. The platinum point is mounted on a pantagraph, and, consequently, it is not necessary to trace the design on the velvet before the operation. The Pyrogravure is susceptible of various applications in decorating velvets. Decoration by painting is, of course, a matter of taste, and can be classed with hand painting on glass or silk. The colors used should contain no oil or fatty matter; otherwise, a stain will appear around the edge of the decoration. This method is very much in vogue at present, and colors containing no oil are offered for sale for this work.—Translated for The Textile World from L'Industrie Textile.

Speed and Production of Cotton Combers.

Editor Textile World:

To show my appreciation of the articles on combing cotton, in your January issue, I will add my mite to the testimony of practical combers.

Improvements in picking machinery have enabled one to produce a very clean and even lap which should help increase quality and quantity in carding. Card cylinders can be run at 180 revolutions per minute with wire as fine as 130s, 80,000 points to the square foot on cylinder and top flats, and 140s wire, 90,000 points to the square foot on doffer producing 600 lbs. per week without injury to wire if properly cared for, on all grades of cotton from one and one-eighth inch to Sea Island.

It is too often the case where fine wire is used, that fine emery is used for grinding. It is ground light and slowly, putting a chisel point on wire, and resulting in very poor work. Fine wire should be ground often with emery as coarse as eights or tens. This will grind the sides of the wire almost to the knees, thus giving a needle point which will produce first-class carding. The writer's comber production per week from such carding is 450 lbs. on eight head combers, using Peeler and Egyptian cotton for 150s yarn.

The comber runs 93 nips per minute with the following needles:

Strips	No.	1	2	3	4	No	20	book.	No.	20 needles
"	"		5	6	7	"	22	"	"	22 "
"	"			8	9	"	24	"	"	24 "
"	"		10	11	12	"	24	"	"	26 "
"	"			13	14	"	26	"	"	28 "
"	"		15	16	17	"	28	"	"	30 "

Combers can run 93 or 94 nips per minute and do first-class work if needles are set at the right pitch, thus allowing the brush to perform its work and keep the half lap free from cotton.

DANE.

—A prize has been offered by the Venezuelan Government for the best sample of fibres extracted from the banana plant. It is a well-known fact that useful fibres can be obtained from the plant, but heretofore it has not been possible to manufacture them at a price that would permit them to compete with manila hemp and sisal grass.

—Reports from Calais indicate that there is considerable uneasiness in regard to the growing competition of America in the lace industry. It is stated that lace workers are being engaged in Calais for work in the United States at a guaranteed wage of sixteen dollars per week.

—The government in Victoria, Australia, has started a system of old age pensions; the pensioners already number 16,000 and receive an average of $1.92 weekly. The total cost of these pensions is $1,603,800.

—When you are alone, think of your own faults; when you are in company, forget the faults of others.—Oriental Proverb.

WOOLEN DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Finishing Wool and Mixed Fabrics.

III—BROAD CLOTHS.

BY N. REISER.

Translated from the German for the Textile World.

(Continued from June.)

(Copyright 1901 by Guild and Lord.)

BILLIARD CLOTH.

These goods are generally woven with a three leaf twill with woolen warp and filling; worsted is sometimes used for warp with woolen filling. For goods with woolen warp and filling the warp is dressed 4800 threads of 4 5/8s run yarn; loom width, 126 inches. The filling is the same size as the warp; the goods are finished seventy-three inches wide, and shrunk from twenty to thirty per cent. lengthways. For worsted warp goods 6400 to 6600 ends of 2/48 worsted yarn is used for warp; the goods are woven 108 inches wide in the loom, with a five run woolen filling, and finished seventy inches wide.

Fig. 1.

Fig. 2.

Fig. 3.

The goods are first buried and then fulled in the grease with a 5° soda solution, washed, gigged on the double gig, the nap straightened on the wet gig, extracted, and dried; then back buried and sheared for about two runs on the back and fifteen on the face, plate pressed, and steamed on the roll. The goods are then examined and pressed in the stitch press.

CROISES.

This is the name frequently applied to face goods woven with a four leafed twill, but in many cases where black goods are manufactured, it is used to designate goods woven with three leafed twill shown at Fig. 1. They are made in various qualities ranging from the finest wool to mixtures of wool and noils. The warp is dressed with from 4000 to 4700 ends; the size of the warp yarn varies from 7½ to 9 runs. The filling is usually spun somewhat finer than the warp in order to produce a smooth face. The method of finishing is similar to that employed for broad cloths woven with a plain weave.

TWILLED OR LADIES' CLOTH.

These goods are made in various qualities and woven with the weave shown at Fig. 2; the bulk of the goods are made in the lower and medium grades. For piece dyed fabrics the cloth is first burled, sewed, measured, and weighed, then washed, carbonized and, if no further burling is needed, taken to the fulling mill; after fulling the goods are washed, then gigged while damp, and the finishing is completed while keeping the goods very wet; they are then dried, back burled, brushed, sheared, rotary pressed, steamed on rolls for fifteen or twenty minutes, and left to cool for from fifteen to twenty hours, and then taken to the dye house.

After coloring the goods are well rinsed in fuller's earth, brushed on the wet gig, extracted, dried, back burled, and steamed; they are then sheared once on the long cut and afterwards finished on the cross cut shear, then brushed, pressed twice in

the plate press, steamed on the roll for fifteen or twenty minutes and left to cool for ten or twelve hours. The excess lustre is then removed by moistening the goods, and the finish completed in the stitch press.

For goods that are to be finished ready for the tailor to make into garments without sponging, the pieces after shearing are lightly pressed in the rotary machine, wound on rolls and steam blown, then unwound, pressed lightly and steamed in order to remove any lustre that may remain. After the pieces have been steam blown on the rolls, it is a good plan to open them up and let them lie on the table to allow the steam remaining in the goods to shrink the fabric so that

Fig 4.

Fig. 7.

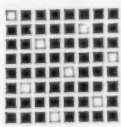


Fig. 5.

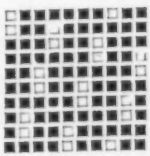


Fig. 6.

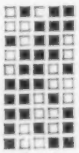


Fig. 8.

no further shrinkage will take place after making the cloth into garments.

CASTORS.

These fabrics sometimes called Summer Eskimos are made in various qualities with a broken four leafed warp twill (Fig. 3). The goods are first buried and sewed, then measured and weighed. If intended for black, blue or brown, the fulling is done in the grease; but for light shades the cloth should be washed and carbonized before fulling; this is necessary in order that no trace of acid may remain to affect the color. After fulling, the goods are given a preparatory gigging with dull work, then dried, back buried, brushed, and given several runs on the shear very carefully, then wet out and the gigging completed on the double gig; then dried, back buried, sheared, and hot plate pressed, steamed on the roll for twenty minutes, and left to cool for a greater or less time according to the handle desired.

The goods are now colored, rinsed, brushed on the wet gig, dried, and plate pressed, steamed on the roll, wet out, wound tightly on rolls, and left in this condition for from six to twenty-four hours; the rolls are turned from end to end occasionally during this time. The cloth is then dried, back buried, steamed, and the shearing completed; before the shearing these goods are frequently gigged on the back; after shearing the pieces are pressed on the stitch press. Castors do not require so hard a pressing and steaming on the roll as the cloths previously mentioned, since the warp lies on the face for three-fourths of the distance, and consequently the face is smoother and acquires a lustre much quicker.

SATINS.

Woolen satins are generally made with a five leafed satin weave, Fig. 4. The twist of the warp should be to the right to bring out the twill as strongly as possible. It is this relation of weave and twist which distinguishes the satin from the doeskin to be described later. If the goods are made of very fine warp the eight leaf, Fig. 5, or ten leaf, Fig. 6, satin weave is used. It will be noticed that in the weave shown at Fig. 6, each warp thread is stitched twice. This makes the fabric firmer, and a misspick does not show so plainly.

It is not necessary to have as fine stock for these goods as for face goods woven with the plain weave, because these cloths in which the warp yarn floats for several picks take a smoother face and consequently handle softer than goods made with a plain weave where the intersections are frequent.

For the five harness satin, Fig. 4, the warp is dressed 6400 threads with 6¾ run yarn. The filling is spun somewhat finer, about 7½ run. The goods are first buried and, in case

they are not too hard, are sewed. The cloth is then measured and weighed to determine the necessary fulling; after fulling and washing the goods are carbonized, if necessary.

The finer qualities are now given a preliminary gigging, then dried, back burled, and carefully given several runs on the shear. They are then wet out and the gigging completed on the double gig. Great care should be taken to begin with dull teasels and sharpen the work very slowly; if this is not attended to, it will be impossible to obtain a good face. After gigging the nap is straightened on the wet gig, the last two runs being in clear water. The pieces are then extracted on the roll extractor; these goods should be dried on the tenter bars in order to obtain a smooth face. While the cloth is on the bars, the nap is well brushed to bring all the fibres parallel.

After drying the goods are back burled, brushed and sheared on the long shear, then plate pressed twice and steamed on the roll for half an hour, and left ten or twelve hours to cool. They are then taken to the dye house; after coloring they are first rinsed in fuller's earth and then in clear water. After straightening the nap on the wet gig, the goods are extracted and dried, back burled, steamed on the back, brushed well on both back and face and carefully sheared; the shear blade should be brought down very slowly in order that a smooth level nap and high lustre may be the result. The cloth then receives a light pressing in the rotary, is steamed lightly on the roll and again pressed in the rotary. The goods are then exposed to the air in order that all superfluous moisture may evaporate and the finish is completed in the stich press.

The Belgian system of finishing these and similar cloths consists in burling, sewing and then fulling in the grease; they are then washed and given a preliminary gigging, dried, given six or seven runs on the shear, wet out and well gigged, the nap straightened on the wet gig, dried, back burled, brushed, sheared, and again brushed. The goods are now wet out, the nap brushed on the wet gig, dried, brushed, sheared, again brushed, hot plate pressed, steamed on the roll, wet out, brushed on the wet gig, dried, burled, pressed, steamed on the roll and colored; they are then rinsed, wound tightly on rolls and left in this condition for

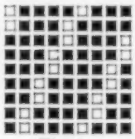


Fig. 9.

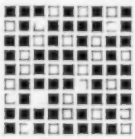


Fig. 10.

Fig. 14.

twenty-four hours, then tentered, brushed, sheared, again brushed, pressed hard, steamed on rolls and in this condition are placed under water for three or four hours. The nap is now brushed on the wet gig, the goods wound on a roll, left to stand for twenty-four hours, then dried, brushed, sheared, again brushed, pressed, steamed on rolls, wet out, brushed on the wet gig, wound on the roll and left in this condition for another twenty-four hours, tentered, brushed, sheared, again brushed, pressed, steamed on rolls and cold pressed.

DOESKINS.

As we have already stated, the only difference between satins and doeskins is in the different relation between the weave and twist of the yarn. A satin made with a weave shown at Fig. 4 can be changed to a doeskin by changing the weave to that shown at Fig. 7; the warp in both cases is twisted to the right, but at Fig. 4 the twill runs to the right and consequently shows more distinctly than when the weave at Fig. 7 is used; in the latter case the twill runs to the left, which, with a right twist warp results in the twill becoming less pronounced.

The twist of the filling is not so im-

portant, as very little of it comes on the face, but it is better to have it twisted in the opposite direction from the warp. This arrangement of warp and filling twist causes the twill to show still less on doeskins and more on satins.

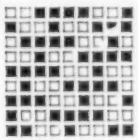


Fig. 11.

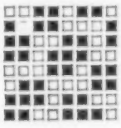


Fig. 12

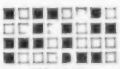


Fig. 13.

NARROW WOOLEN DIAGONALS.

Two varieties of diagonal weaves are shown at Figs. 8 and 9. These goods are made in various qualities. For fine goods in the weave shown at Fig. 8, the warp is dressed with from 4000 to 5000 ends, and in the weave shown at Fig. 9 with from 7000 to 7500 ends of yarn varying from 8¾ to 10 runs. The finish is similar to that of face cloths woven with a plain weave.

GRANITE WEAVES.

The word granite is improperly applied to many goods; for instance, goods woven with weaves shown at Figs. 10 and 11 are called granites, although this is not the case; they belong rather to the class known as diagonal ribs. A granite weave is one showing a more or less pronounced block or checker board effect as shown at Fig. 12. We should not confound the true granite cloths with the goods made with the weaves shown at Figs. 10 and 11, which generally receive a thread-bare finish. Granite cloth made of cheviot wool is often finished with more or less nap, also with the melton finish.

A large quantity of goods are made in the finer qualities with the weaves shown at Figs. 10 and 11. The raw material should be of a very fine quality, as this weave is apt to give the cloth a harsh feel. These goods are made in various qualities; the yarn varies from 5½ to 10 runs. No fixed lay out can be given for this fabric, as every change made in the texture produces a change in the face effect. The finish of the goods is similar to that already described, but care should be taken to avoid shearing too close, otherwise a harsh handle will result.

TRICOTS.

These goods may be divided into tricot long and cross tricot cloths. Fig. 13 shows the weave used for a tricot long, Fig. 14 that for a cross tricot. This tricot effect is produced by using a double plain weave, and at certain places in the weave bringing the back threads to the face and the face threads to the back, thus producing a cut or cracked effect where the change is made. In Fig. 13 this crack occurs between the fourth and fifth, also between the eighth and first warp threads. At Fig. 14 the crack occurs between the fourth and fifth, also between the eighth and first filling picks.

These goods are made in all grades, but especially in the medium quality. Tricot goods, particularly the cross tricots, have been popular for fifty or sixty years, and to such an extent that large factories make a specialty of this one fabric. For the finer grades Sydney wool mixed with fine noils is used and sometimes the filling is made entirely from fine noils. For the medium grades, Cape and Montevideo is used.

The warp is dressed with 5700 ends of 6 to 7 run yarn; loom width, 74 inches. For tricot long effects it is a very good plan to make the filling finer than the warp; in this way the tricot or crack is made more distinct on account of the face warp thread showing up plainer. The opposite rule applies to cross tricots. For these effects the warp should be the finer in order to bring out the cross tricot effect by throwing up the coarser filling rib.

Tricots are first burled and sewed, then measured, weighed, scoured, washed in fuller's earth and rinsed in clear water, extracted and dried. They are then carbonized, if necessary, and neutralized, then fulled, washed, rinsed in fuller's earth, again rinsed, and gigged for about two hours on the double gig, and the gigging is then completed on the single gig.

The cloth is now dried, back burled, brushed, and given several runs on the shear. It is then hot plate pressed, steamed on rolls, left to cool in this condition and then colored. The goods are next rinsed, the nap straightened on the wet gig, extracted, dried, back burled, sheared, wet out, brushed on the wet gig, dried, steamed and sheared. They are then specked, brushed and plate pressed, either with cold, medium or hot plates, according to the lustre desired. Frequently these goods are gigged on the back before coloring.

(To be continued.)

—I do not know whether it is owing to a taste that is peculiar to myself or not, but one never appears great to me who makes me feel that I am small.—Palajos.

Idler Pulley for Wool Combing Machines.

The accompanying illustration shows an idler pulley which has recently been patented in this country and which is designed for an apron of a wool-combing machine or for use where fibrous stock is employed; the object of this invention is to provide an oil-tight idler-pulley, which will be less liable to become stuck or jammed on its bearings than the forms now in use.

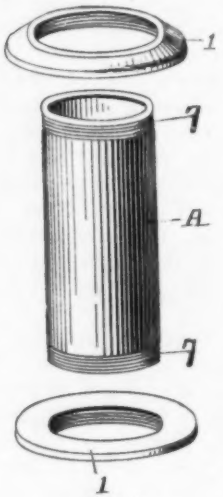


FIG. 1.

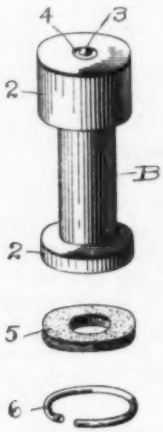


FIG. 2.

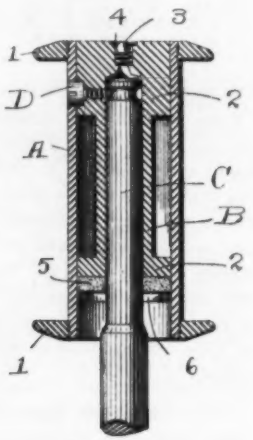


FIG. 3.

Figure 1 is a perspective view of the parts which constitute the shell of the idler-pulley; Fig. 2 is a perspective view of the parts which fit into the shell; Fig. 3 is a transverse view of the complete pulley.

In using that form of wool-combing machines in which leather aprons or belts are employed for carrying away the stock from the circles of the combing-machine considerable difficulty is experienced on account of the tendency of the material to work into the bearings of the pulleys and cause them to jam on their bearings. When the idler-pulley becomes stuck, the belt or apron becomes frayed and worn out; a considerable item of expense in operating wool-combing machiney is

incurred in repairing or supplying new aprons for the machine. This idler-pulley consists of a shell or outer section having a spool or core fitted therein. The spool or core is driven far enough into the shell of the pulley to leave a chamber or pocket at the lower end, which is packed with a felt washer or similar material, forming an oil-tight packing, while the upper bearing of the spool or core is closed and the pulley is held on its stud or shaft by a screw engaging a groove near the upper end.

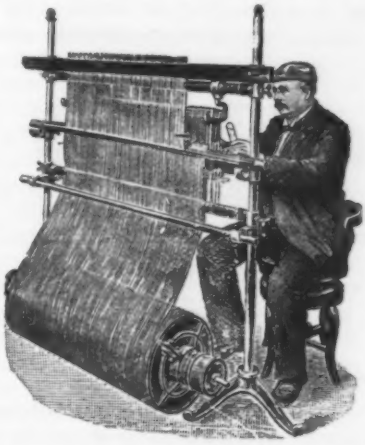
Referring to the accompanying drawings the idler-pulley comprises an outer shell consisting of a pipe-section A, having threaded ends 10. Secured to the ends of the pipe A are the flange-pieces 11, which may be brazed or headed onto the pipe A. Fitting into the shell of the pulley is a center piece or spool B, having enlarged ends 12. The upper end of the spool B is closed, except that it is provided with a dust-tight oil-hole, which may be closed by a spring-supported ball 13, held in place by a washer 14.

As shown in Fig. 3, the spool B is driven far enough into the pipe or shell to leave a pocket at the lower end; secured in the pocket is a felt washer or packing 15, which is held in place by a spring-ring 16.

The spindle or stud C of the pulley is provided with an end bearing, and the pulley is held in place on its stud by a screw D, the point of which engages a groove near the upper end of the stud C.

Drawing in Frame.

The accompanying illustration shows a drawing-in frame patented in Germany, and now being offered for sale in that country. It requires but one operative, whereas the usual custom there and to some extent in this country has been to provide both a hander-in and drawer-in for this work. The end of the warp is fastened with a suitable clamp at the top of the frame; this brings the threads in an upright position, and the clamp is so adjusted that the threads can be easily pulled from the clamp by the drawer-in. The harnesses are hung on the hooks shown in the illustration, and the reed is held by supports in front of the harnesses. The operative draws the



threads through the heddles with a hook in the right hand, and places them in the reed hook held in the left hand, and when the reed hook has as many threads as should be drawn in a dent, the drawer-in pulls them through into the reed and pushes the hook into the next dent to receive the following threads.

A Woven Fabric.

The accompanying illustration shows a fabric for which a U. S. patent has recently been issued.

According to the inventor's description it is a fabric having its warp arranged in groups of three threads each, the outer threads of each group crossing each other at intervals forming a series of loops arranged in staggered order, the middle of the three threads extending along the crossings and middle of the series of loops and having each two adjacent weft-threads alternately approaching each other and passing together between the middle and outer threads of a loop and then diverging and passing separately

between the middle and outer threads of adjacent loops.

The object of my invention is to provide a very strong, open cross-weave fabric woven in the above manner, which will present an attractive appearance, and retain its pattern under great longitudinal stress, thus rendering the fabric particularly applicable for use in hammocks.

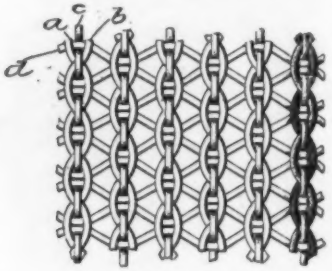


FIG. 1.

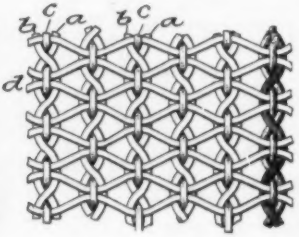


FIG. 2.

FIG. 3

In the accompanying drawings, Figure 1 represents a view of one face of the fabric. Fig. 2 represents a view of the other face, and Fig. 3 is a sectional view.

Each group of three threads in the warp consists of two outer threads a b and a middle thread c. The outer threads a and b of each group cross each other at intervals, forming a series of loops. The middle thread c of each group extends along the crossings and middle of the series of loops. The loops in one group of threads are opposite the crossings in the adjacent groups, so that the loops are arranged in staggered order.

The weft-threads are denoted by d, and each two adjacent weft-threads alternately approach each other and pass together between the middle and outer threads of a loop in one of the groups and then diverge and pass separately between the middle and outer threads of two adjacent loops in the next group of warp-threads.

—The U. S. Consul at Gera reports that many German woolen and worsted manufacturers desire to move their works to the United States on account of the unprofitable condition of business in Germany. A few wealthy manufacturing concerns have already established branch mills in America.

—A French patent has been granted for a wool scouring process which consists in treating the wool with carbon tetrachloride. This material possesses the advantage of not being inflammable and in using it the wool can be previously soaked in water, by which means most of the sand and soluble materials are removed.

—A new method of decorating textiles has been invented in France, and consists of printing or stamping the back of the fabric when it is in a folded or wrinkled state. The goods are folded or wrinkled as required by the design to be obtained, and printed in this condition. The liquid color penetrates the folds to some extent by reason of capillary attraction. When the fabric is straightened out the pattern shows through the goods. It is said that a great variety of effects can be secured by combination of different patterns and methods of folding the goods.

—At the recent auction sale of River Plate wool in Liverpool, 5846 bales were disposed of at the following prices. Lincoln 4d. to 5½ d. Medium cross-bred 4½d. to 6d. Merino 5¼ to 6½ d. Lambs 3½ to 5½ d. In United States currency these prices range from 3½ cents for the lowest, to 13 cents for the best grades.

SILK DEPARTMENT.

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Silk Finishing.

In the silk industry the finish is in most cases applied to the yarn and not to the woven goods. This is the case not only with colored and uncolored silk yarn such as sewing lace and embroidery silk, but also to many varieties of yarn intended for weaving into ribbon or other silk fabrics. In the latter case the finish given to the yarn may be considered as a preparatory process for the finish which is given to the woven goods. The lustre which the silk has lost in dyeing is restored by a lustering process consisting of the application of preparations which are varied according as the manufacturer desires to give the material a soft handle or what is called "scroop."

Black dyed silk yarn can be softened and at same time given this "scroop" by treating the material in a solution of citric acid, olive oil, water, and soda or potash; for boiled off silk from one to two per cent. of olive oil (reckoned by weight of yarn), for soupled silk from five to fifteen per cent. and for fringe silk from five to twenty per cent. of olive oil is used. The proportion of oil should be varied according to the nature of the silk and the use to which it is to be applied, i. e. whether warp or filling. For satin taffeta, or other woven fabrics the olive oil is emulsified in double the quantity of water with a 65 per cent. soda solution. If the scroop effect is desired, from twenty to twenty-five per cent. of citric acid is added, and the mixture cooled to 35 deg. C. The silk is immersed in this solution, and afterwards extracted and dried. In place of citric acid, which is best adopted for giving a soft handle of silk, there may be used either 10 per cent. of acetic, 9 per cent of hydrochloric acid or a dilute sulphuric acid solution. A certain proportion of glue or gelatine is sometimes added to the emulsion to improve the handle of the goods.

When the yarn is intended for goods which are to receive a moire or watered finish, it is treated in a sulphonated olive oil well diluted with water, and dried without being extracted. This serves to soften the silk. Another process consists in handling the silk half an hour in a soap solution consisting of from 20 to 30 per cent. of white soap at a temperature of 30 deg. C. A method which is well adopted for sewing silk consists in handling the yarn for half an hour in a solution of water and fuller's earth. Recently silk has been weighted with various materials, such as acetate of lead, then dried and impregnated with olive oil without the addition of acid. From a hygienic standpoint this process is very objectionable.

The mechanical part of the finishing process consists chiefly in stretching the yarn. The wet skeins are hung on horizontal rods in an upright position the workman shoves a stick through the lower part of the skein, and by jerking the skein with this stick brings the threads parallel with each other, and stretches the silk from 2 to 3 per cent. This operation is also carried on by machines, of which there are various makes. By drawing the skein sideways as well as lengthways the threads are made to rub against each other; this serves to give the silk a lustre; this process is very important for sewing silk and silk twine. A much higher lustre is given to silk by means of machines in which the

silk is drawn over metal cylinders, and steamed in closed vessels.

Fabrics made of pure silk require no finishing applications. The finish of such goods consists in hot pressing, mangling or light calendering with or without friction. The finish of light silk fabrics is usually given to one side only of the goods by the application of easily dissolved substances such as glue, gelatine, dextrine, tragacanth, gum arabic, resin and other soaps, resin dissolved in alcohol, paraffin wax, and similar substances. Generally the finishing material is applied to the back side of the goods and while the cloth is stretched on the tenter bars. In this condition the finishing material is applied by hand. This dressing can be applied by machinery; the goods are then dried on a cylinder dryer, calendered, or run through engraved cylinders to decorate the fabric. Silk and cotton goods are finished on one or both sides.

Silk fabrics made of pure, unweighted silk yarn require the application of no finishing materials, but are simply hot pressed; but suitable means must be employed in the case of cheaper qualities of silk to give the goods the requisite stiffness, solidity and scroop. The application of finishing materials to silk goods should be made only on one side and in most cases this should be the back side. The best results are obtained not by saturating the goods with the preparation, but by applying the solution to the surface of the fabric while stretched on the tenter bars.

Various materials are used for finishing silk goods, such as rice water, gum solutions, ox gall, sugar water, isinglass, gelatine, poppy oil, and tragacanth. Other preparations are used for giving lustre to silk goods. These consist of metallic oxide solutions, such as sulphate of copper, lead and bismuth oxides. After treating with either of these materials the goods are submitted to the action of sulphuretted hydrogen. Basic acetate of lead oxide may be employed in a similar way and greatly heightens the lustre of black silk. For other varieties of finish resinous substances may be employed such as amber, copal, rosin, and pyroxylic spirit. Resinous soaps made by boiling resin in alkali gives a more durable finish than the gums and are employed as water proofing materials; water does not cause a spot when dropped on goods finished with this mixture. The following are a number of recipes for silk finishing mixtures.

1. Kappelin. 22 lbs. rice; and 13 galls. water. The rice water is strained through a sieve and 110 lbs. of white fish glue is added. Albumin and dextrin may be used.

2. Ramsbottom. Silk is treated in a very weak solution of shellac dissolved in spirit, which imparts a stiffness and high lustre to the fabric; this method cannot be recommended, as it makes the silk very stiff and brittle. Another method consists in treating the silk simply with a solution of gum arabic or tragacanth and chloride of tin; or with rosin and amyl-alcohol.

3. Pastor. This preparation is made by dissolving tragacanth in rain water, adding glue and stirring the mixture thoroughly. It is then brought to the consistency of syrup by adding brown beer and brandy.

4. Knape. The warp is sized with gelatine. The filling is wound dry on the bobbin. A wet sponge is fastened in the shuttle; the filling thread passes over the sponge and is moistened as it is woven in the cloth. The woven goods are then dipped in a hot gelatine solution, half dried, wrung out and then dried on the tenter bars.

5. Material for finishing silk on one side; ½ lb. gelatine, 5 galls. water, 3½ lbs. paraffin, 1 lb. white wax, 2½ lbs. castor oil, and 2 lbs. soap.

6. Full finish for silk; 33 lbs. glue, 25 galls. water, 1 pint tragacanth mucilage, 1 pint soap, and 1 pint of cocoanut oil. If the goods possess too high a polish when calendered it can be reduced by steaming over a steam jet or on rolls.—Friedrich Polleyn Die Appreturmittel.

A Model Silk Dyehouse.

No. II.

(Continued from March.)

As a rule, floors of dyehouses are not constructed in the most economical manner, wood being often used, no doubt on account of its low first cost, but the best floors for dyehouse purposes are to be had only of flagstones or artificial stone. The floors should be laid upon very well rammed foundations, and have a slant or grade to the centre line of the dyehouse, along which line at two points should be the inlets to the drains.

If flagstones are not favored, the next best substitute is asphalt. Only the very best quality of pavement should be laid, using asphalt and not petroleum or coal-tar residues. Cement floors, on account of their ready injury by acid liquors from the dyetubs are not serviceable, while brick does not meet with approval for various reasons.

On the whole, good stone floors are the easiest to keep clean, free from the evils of frequent repairing, and will, with such attention as may be necessary, outlast any other material.

Wood for dyehouse floors, that has been treated with preserving materials, does not resist the ordinary dyehouse wear and tear, mainly due to the absorption of acid liquors, and the alternate drying and wetting.

Opinions differ as to the proper treatment of the interior of dyehouses. Silk dyehouses, on account of the high cost of the material to be treated, should be kept clean, and one of the best ways to instil the idea of cleanliness is to have the walls occasionally whitened, and the windows cleaned. The liberal use of whitening in mills and dyehouses has never injured any business.

One point of special importance in dyehouses is the necessity of painting the steam and water pipes. This will ensure clean surfaces; moisture dripping from dirty or rusty surfaces has been the frequent cause of trouble to dyers. This is particularly the case where there are overhead pipes that have never been boxed or covered. In the case of steam pipes, the use of sectional asbestos or other nonconducting covering is to be strongly recommended, as it not only serves as a protection against objectionable dripping, but is a steam saver, and adds materially to internal appearances. Water may be strictly clear, no visible sediment, tasteless even when having been standing for twelve hours, and is free from odor of any unusual kind. From these facts one might safely conclude that no mechanical impurities are present, and that organic matter is absent; but upon attempting to boil-off our raw silk, a kind of precipitate thoroughly distributed through the bath is noticed, which in a short time gradually rises to the surface of the water. When the attempt is made to dye light shades, there are many uneven patches and higher colored streaks. These irregularities are due to other impurities contained in the water which the first examination failed to show.

If upon evaporating a sample of the water to a small volume, say less than one ounce, and adding a drop or two of nitric acid, and a drop of a solution of yellow prussiate of potash, a more or less bluish coloration appears, one may conclude that iron is present, which may have a saddening effect on some very delicate shades dyed upon tannic acid weighted silk.

If another sample is evaporated to small bulk, acidulated with a few drops of hydrochloric acid, neutralized with ammonia in slight excess, and a few drops of a solution of oxalic acid added, the presence of lime will be indicated by a white cloudiness or white precipitate.

A good general test for clear waters is to add to a quart sample about half

an ounce of a solution of sodium phosphate and a few drops of ammonia. If any cloudiness is visible in a short time, it is an indication that either lime or magnesia or both are present, and should be removed by proper chemical treatment of the water; this may require a plant to treat the entire supply, if the proportion is any way large.

For ordinary water supplies, two general systems of treatment are in vogue; one is simply mechanical and consists essentially of filtering the insoluble particles of sand, silt, and any decaying vegetable or other organic matter present. A good method of filtration for mills is to construct suitable reservoirs with sand bottoms, underlaid with drainage conduits, through which the clarified, but not purified water, is led to the main supply tanks.

By far the best system to adopt for silk mills is to make use of one of the many processes which employ a chemical coagulant, usually a hydrate of alumina, which has the peculiar property of removing nearly all the impurities which a water supply may contain.

"BETA-NAPHTHOL."

(To be continued.)

Improved Method of Handling Silk in the form of Cocoon, Thread or Cloth.

The silk is immersed in an 18° B. muriatic acid bath and should be held under tension to prevent any shrinkage during the process. The silk remains in this bath three or four minutes. The material is immersed in cold water as soon as taken from this bath and kept under tension. It is then washed and colored. This process is said to give the silk a much higher lustre than is obtained by methods previously used.

Purification of Water for Silk Filatures.

Reports from Italy state that a number of large filatures in that country have adopted a new process for purifying the water used in their works. It was discovered by M. Ludovico Natali of Bergame, and has been patented in Italy. The Italian paper describes the process as consisting simply of the addition of sulphuric acid to the boiling water in such proportions as to neutralize the alkali; it is stated that by using water which has undergone this simple treatment, the silk unwinds from the cocoon much easier, and possesses much more elasticity, resulting in a much larger production in the subsequent processes of manufacture.

A proprietor of a large silk filature in Italy who has used this process states, that it has been tested thoroughly in his works, and that the results have been very satisfactory. The production was increased at least 10 per cent., and the silk was much softer and stronger.

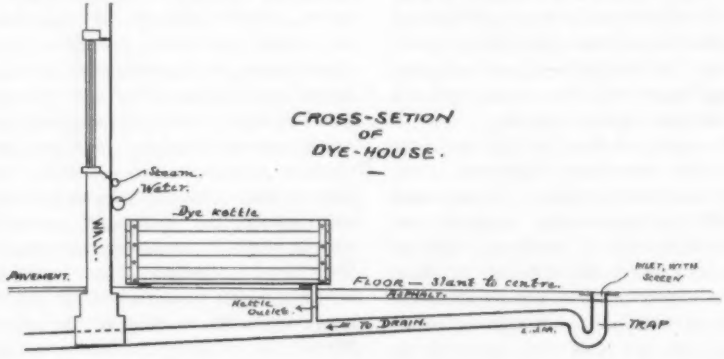

FIG. 3.

POWER DEPARTMENT

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ELECTRICITY—STEAM—WATER.

Power Transmission.

The various examples of power transmission by belts show that this method is well adapted for transmitting large amounts of power for a considerable distance. But there is a limit to the distance beyond which the high cost of belting renders its use out of the question. For very long distances the rope drive is found preferable. While it is adopted for long distances and a large amount of power, it is in many cases also advantageously employed for short distances and a small amount of power.

The endless ropes are made of various materials, hemp, cotton, and wire. The material to be employed is determined by particular conditions in each case. The first two, hemp and cotton, can of course be used only when protected from the weather, and are therefore confined to the inside of buildings. Wire rope, however, can be used outside with very good results. The employment of hemp does not give good results for distances above sixty feet, while cotton rope, owing to its softness and pliability, is confined to still shorter distances such as for connecting different parts of a machine.

Almost any amount of power can be transmitted by hemp rope by the employment of a number of ropes on the same pulley. The diameter of the rope should correspond to the amount of power to be transmitted, and varies from one to two inches. The pulley over which the ropes run side by side should have as large a diameter as possible, but not less than thirty times the diameter of the rope.

As in transmitting power by belt, the rope drives may be divided into two varieties; one, where the tension is created by the length of the belt; and the other in which special tension devices are used. The tight part of the rope should be on the under side. This results in a greater arc of contact on the pulley, as well as economy of room. The distance between the shafts should be as great as possible, not less than twenty-five feet.

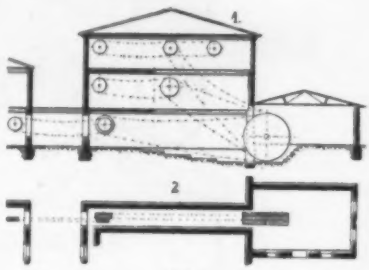


FIG. 1.

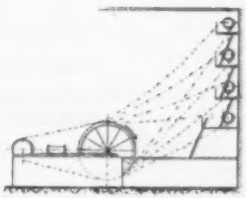


FIG. 2.

The usual arrangement of a rope drive is shown in Figs. 1 and 2. The arrangement shown in Fig. 1 is especially suitable for a rope drive, as the ropes from the fly wheel run in a separate passage way, which is separated from the other work rooms. The same arrangement is shown in a slightly different form at Fig. 2. Power is here transmitted to five different floors from the main fly wheel.

The best rope speed for such a drive is between 50 and 75 feet per second. An increase above the last named speed is not accompanied by any gain, owing to the centrifugal force which reduces the tension of the rope on the pulley. The following table gives speed and dimensions in several examples of rope drives:—

Horse Powr.	Fly Wheel. Rev. per min.	Diam. feet.	1st. Driv. Pulley. Rev. per min.	Diam in.	Ropes. Strands.	Diam. in.	Speed. Ft per sec.
88	55	18	150	79	7	2	52
75	55	18	215	55	7	2	52
270	120	12	240	72	13	1¾	75
120	70	15	210	60	8	1¾	56

A rope drive without separate tension devices, where the strain of the rope itself is relied upon, gives very good results when well arranged, and the splicings of the rope well made. The disadvantage of this system, however, consists in the greatly increased strain on the shaft, which increases the friction of the bearings; in addition to this the different ropes are apt to stretch unequally and become of various lengths, which necessitates frequent resplicing. Neither can this system be used when one shaft is directly over the other.

These various objections are removed by the use of tension pulleys. In such cases the variation in the length of the rope has no influence upon the tension, and the relative position of the shafts to each other is a matter of indifference. Where tension pulleys are employed only one rope is used, and this passes over the rim of the pulley as many times as single ropes would otherwise be required.

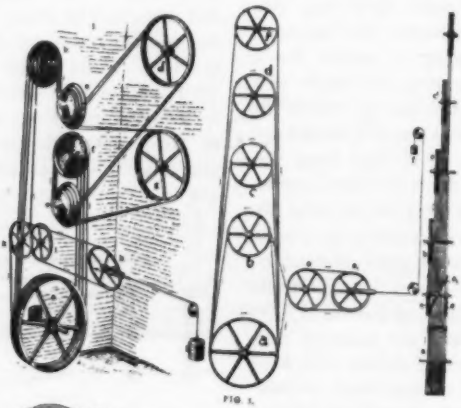


FIG. 1.

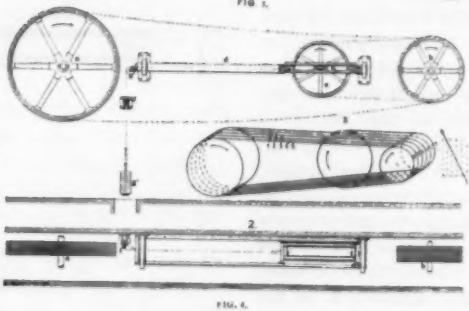


FIG. 2.

From the first groove of the driving pulley, the rope passes in a spiral form around the first groove of the driven pulley, back to the second one of the driver, and then to the second groove of the driven pulley. From the last groove of the driven pulley the rope passes to the tension pulley, and then to the first groove of the driver.

The necessary tension is created by a suitable weight on the tension pulley. This tension pulley runs in a frame work on a track. The wheels

of this frame work run in iron grooves so they will not come off the track.

Fig. 4 shows an arrangement for a tension pulley for a horizontal rope drive. The small pulley has six grooves, the large one five, and the rope runs as follows: from groove 1 of the large pulley to groove 2 of the small pulley, then back and forth over the pulleys until it passes from the sixth groove on the small pulley to the tension pulley, and finally back to the first groove of the large pulley.

drive with tension pulley is shown at Fig. 3 (No. 1). By this arrangement the power is carried from the driver (a) to two driven pulleys (b) and (g) standing at right angles to the driver. The rope runs in the first groove of the pulley (a) to the tension device (k. h. i. l) and from the pulley (i) over the first groove of pulley (b); from here it runs to the idler pulley (c), then over the driven pulley (d) to the other idler (e); then it passes over the pulley (f) back to the pulley (a).—Uhland's Technische Rundschau.

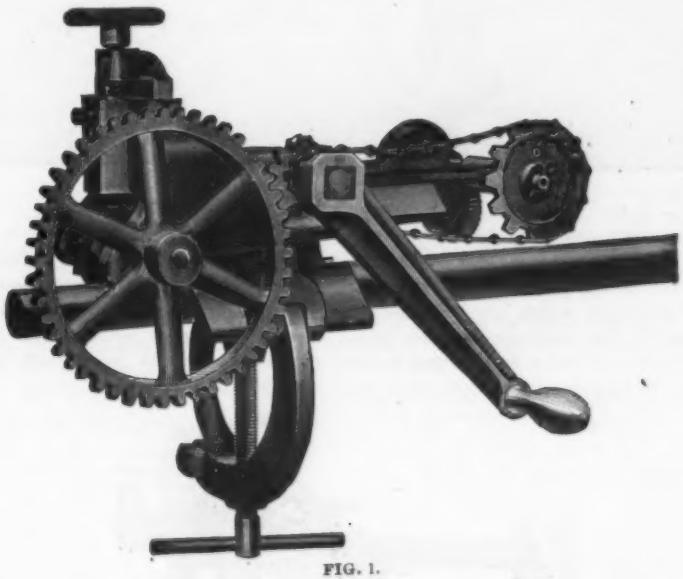


FIG. 1.

Fig. 3 (No. 2) shows an arrangement for transmitting power in a vertical direction by a rope drive. The advantage of tension pulleys is especially shown in such vertical drives as this one. The arrangement is such that power is transmitted from the main drive a to four separate shafts on different floors of the factory. The tension device consisting of the fixed pulleys (e. e2) and the oblique pulley (e l), together with the weight (f), is inserted when the rope passes from the last driven pulley b back to the driver (a).

An interesting example of a rope

A Labor Saving Device.

A tool which is fast becoming a necessity in the mechanical equipment of modern shops, and one which even textile mills will probably find to be a profitable investment, is the Lake Portable Key Seater, manufactured under patents by the John Leisenring Manufacturing Company, of Belmont and Elm Avenues, Philadelphia. This company is known to the textile trade by their loom reed department, which turns out loom reeds of all kinds. The writer of this arti-

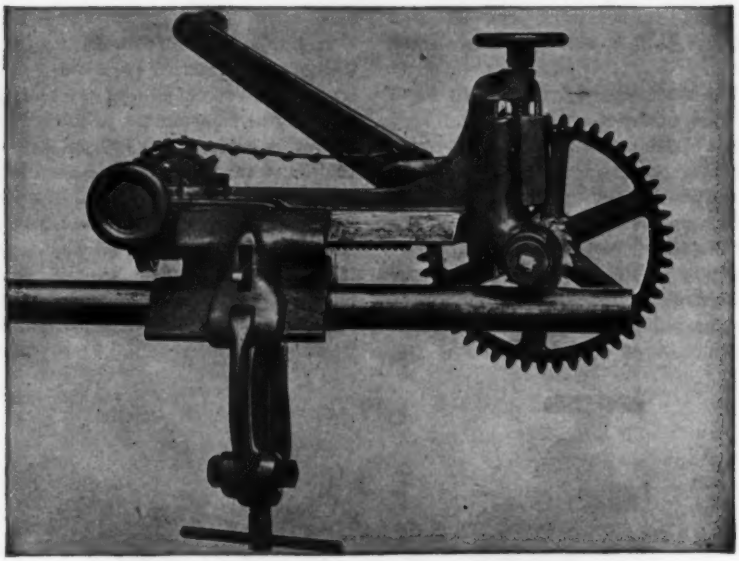


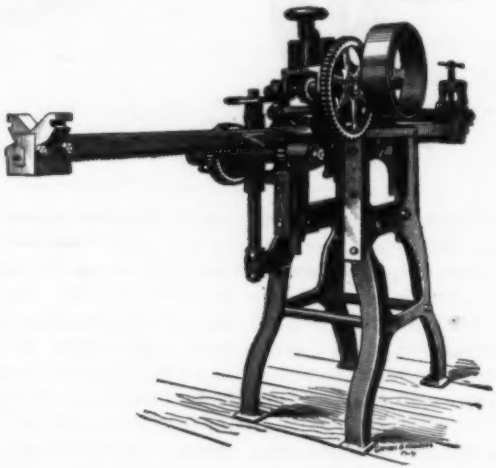
FIG. 2.

cle recently called at their works to look after some reeds, and became interested in the key seating machine.

Illustrations which are here shown represent the machine in two positions mounted on a small sized shaft. Fig. 1 represents the machine as it appears after having cut a key-seat four inches from the end of the shaft.

Fig. 2 shows from the other side, after the base has been moved forward on the shaft previous to continuing the milling of the key way.

Another machine which this company manufacture, and which is shown at Fig. 3, is a continuous key way or spline cutter and portable key seater combined, which will cut a continuous groove in a shaft at the rate of one inch per minute.



That these key seaters are profitable investments is proven by testimonials, which the company showed from such people as:—Lehigh Zinc & Iron Co., South Bethlehem, Pa.; Hoosey & Jones Co., Wilmington, Delaware; Jos. Dixon Crucible Co., Jersey City.

DYEING DEPARTMENT

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

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Dye Recipes for July.

Recipe No. 97.

Blue Black on Cotton Yarn.

Tetrazode Black B B on 100 lbs. of cotton yarn.

Prepare the dye bath with

30 lbs Common Salt

and

8 lbs. Tetrazode Black B B.

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

1 lb. Soda Ash (dissolved separately).

Enter the yarn at a boil and dye at this temperature for one hour.

Then enter into a bath containing

3 lbs. Sodium Nitrite.

9 lbs. Muriatic Acid.

Work well in this bath for fifteen minutes, wash in cold water and enter immediately into a developing bath containing

1 lb. Beta Naphthol,

dissolved in as small a quantity of 70° Tw. Caustic Soda solution as is possible.

Work cold in this bath for fifteen minutes, then wash and dry.

Tetrazode Black B B when dyed in this way and developed with Beta Naphthol gives excellent and fast shades of blue black.

Recipe No. 98.

Orange on Cotton Yarn.

Buffalo Orange G on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Buffalo Orange G.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

25 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Buffalo Orange G possesses all the characteristics of the direct cotton colors, goes on the fibre evenly, and has high tinctorial power. The fastness to light and washing is also good, and it is also suitable for the dyeing of cotton and wool mixed goods.

Recipe No. 99.

Brown on Cotton Yarn.

Compound Shade on 100 lbs. of cotton yarn.

Prepare the dye bath with

4 lbs. Thiocatechine No. 1.

1 lb. St. Denis Black B.

(Sykes & Street, 85 Water St., New York.)

10 lbs. Soda Ash.

50 lbs. Common Salt.

Enter yarn cold, and work for one-half hour, then raise to 195° F., then work at this temperature for one-half hour longer, then lift, wash, and fix in a fresh bath containing

2 lbs. Potassium Dichromate.

2 lbs. Copper Sulphate.

3 lbs. Sulphuric Acid.

for one-half hour, at a temperature of 176° F., then wash and dry.

The compound shade produced in this way possesses remarkable fastness to all the common light destroying agencies.

Recipe No. 100.

Yellow on Mercerized Cotton Yarn

Boston Yellow on 100 lbs. of mercer-

ized cotton yarn.

Prepare the dye bath with

2 lbs. Boston Yellow.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

25 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Boston Yellow possesses all the characteristic properties of the direct cotton colors and goes on the fibre evenly. Its fastness to light is also good, and it may be used in the dyeing of cotton and wool mixed goods.

Recipe No. 101.

Pink on Mercerized Cotton Yarn.

Diamine Rose G G N on 100 lbs. of mercerized cotton yarn.

Prepare the dye bath with

½ lb. Diamine Rose G G N.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

20 lbs. Common Salt.

1 lb. Soda Ash.

Enter yarn at 160° F., bring to a boil and dye at this temperature for one hour.

Diamine Rose G G N, like the former brands of Diamine Rose, dyes fine and level shades and possesses excellent fastness to light. It is rather bluer than Diamine Rose G D.

Recipe No. 102.

Navy Blue on Cotton Yarn.

Direct Navy Blue on 100 lbs. of cotton yarn.

Prepare the dye bath with

4 lbs. Direct Navy Blue.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 180°, and while turning raise to the boiling point and continue boiling for one hour. Wash and dry.

Direct Navy Blue gives full and rich shades of blue and produces very even dyeings even when the cotton is entered in the boiling bath.

The shade produced is quite fast to washing and light and if treated with blue stone the shade will resist hot starch.

Recipe No. 103.

Garnet on Worsted Yarn.

Acid Alizarine Garnett R on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Acid Alizarine Garnet R.

(Victor Koechl & Co., 122 Hudson St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at from 104° to 120° F., and raise slowly to the boil during one-half hour, then dye at this temperature one hour and add

2½ lbs. Potassium Dichromate, and boil one-half hour longer.

Acid Alizarine Garnett R belongs to the set of Chrome Developing colors and produces shades that are distinguished for brightness and fastness. It equalizes well and its fastness to light is very good.

Recipe No. 104.

Black on Worsted Yarn.

Alpha Black D on 100 lbs. of worsted yarn.

Prepare the dye bath with

5 lbs. Alpha Black D.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

10 lbs. Glauber's Salt.

5 lbs. Acetic Acid.

Enter at 160° F., bring to a boil, and dye at that temperature one hour.

Alpha Black D is an acid black of good quality, dyes evenly, and has good coloring power.

Recipe No. 105.

Green on Worsted Yarn.

Fast Green B on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Fast Green B.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 170° F., bring to a boil and dye at this temperature for one hour, exhausting the dye bath if possible.

Fast Green B will stand considerable milling, is fairly fast to light, and also dyes very evenly.

Recipe No. 106.

Yellow on Worsted Yarn.

Lactol Yellow on 100 lbs. of worsted yarn.

Prepare the dye bath with

2 lbs. Lactol Yellow.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Lactol Yellow is especially fast to light, and very desirable for coloring carpet yarns.

Recipe No. 107.

Seal Brown on Cotton Yarn.

Direct Seal Brown on 100 lbs. of cotton yarn.

Prepare the dye bath with

4 lbs. Direct Seal Brown.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 180° F., and while turning raise to the boil and continue the boiling for one hour. Wash and dry.

Direct Seal Brown gives very rich shades of brown, which are quite fast to light, washing, and scouring, and if the yarn is treated with an after bath of blue stone and chrome, the shade is made extremely fast.

This bath does not exhaust, and subsequent lots of cotton require one-third less dyestuff to produce the same shade.

Direct Seal Brown can be used as a self color or will work on in combination with any of the salt dyeing colors.

Recipe No. 108.

Light Green on Worsted Yarn.

Compound Shade on 100 lbs. worsted yarn.

First mordant the yarn in a bath made up with

2 lbs. Tartar,

3 lbs. Potassium Dichromate,

entering the yarn at 140° F., then bringing slowly to a boil, mordanting at this temperature for one hour.

Then dye in a bath made up as follows:

¼ lb. Anthracene Blue C P.

¼ lb. Anthracene Yellow G N.

(C. Bischoff & Co., 87-89 Park Place, New York.)

2 lbs. Acetic Acid.

Enter the yarn at 140° F., bring slowly to a boil and dye at this temperature for one hour.

The compound shade produced in this way is very fast to all color destroying agents.

Recipe No. 109.

Brown on Mercerized Cotton Yarn.

Chlorazol Brown R on 100 lbs. of mercerized cotton yarn.

Prepare the dye bath with

3 lbs. Chlorazol Brown R.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

30 lbs. Common Salt.

Enter the yarn at 180° F., bring to the boil and dye at this temperature for one hour.

Chlorazol Brown R possesses all the characteristic properties of the direct cotton colors and produces full and pleasing shades.

Recipe No. 110.

Blue on Cotton Yarn.

Direct Blue R N on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Direct Blue R N.

(W. A. Ross & Bros., 11 William St., New York.)

25 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Direct Blue R N possesses all the

characteristics of the direct cotton colors and may also be applied to cotton and wool mixed goods by modifying the above directions.

Recipe No. 111.

Black on Worsted Yarn.

Alizarine Black F B on 100 lbs. of worsted yarn.

Prepare the dye bath with

4 lbs. Alizarine Black F B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

3 lbs. Acetic Acid.

Enter the yarn at 90° F., bring to a boil and dye at this temperature for a quarter of an hour. Then add

½ lb. Sulphuric Acid,

and continue the boiling until the bath is exhausted. Then add

1¼ lbs. Potassium Dichromate,

and boil one-half hour longer.

Alizarine Black F B possesses excellent fastness to milling, carbonizing, and steaming, as well as wear and light.

Recipe No. 112.

Brilliant Red on Mercerized Cotton Yarn.

Brilliant Purpurin R on 100 lbs. of Mercerized Cotton Yarn.

Prepare the dye bath with

3 lbs. Brilliant Purpurin R.

(Berlin Aniline Works, 72 Front St., New York.)

20 lbs. Glauber's Salt.

1 lb. Soda Ash.

Enter the yarn at 120° F., bring to a boil and dye at this temperature for one hour.

Brilliant Purpurin R possesses all the characteristic properties of the direct cotton colors, has a high coloring power and goes on the fibre evenly.

—Literature aids not only to live tranquilly but to live better. History especially has a power to pacify, that serves to make one just.—Victor Duruy.

—The artist who frequently distrusts himself is strong; the one who never trusts himself is lost.—Delpit.

Method of Bleaching Cotton Yarn.

This method of bleaching which we are about to describe, says a writer in the Ost. Wollen und Leinen-Industrie, is not new, but, as we have found in many years of experience, is but little known. It gives good results at a low cost for material and labor. The chief advantage of this method is that the bleaching and scouring operations can be carried on simultaneously in

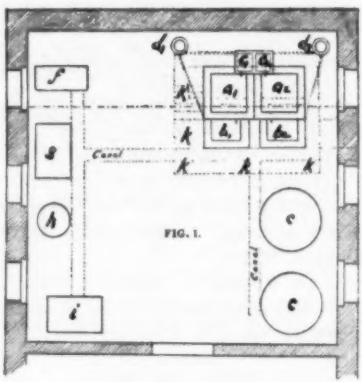


FIG. 1.

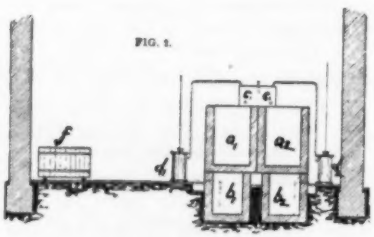


FIG. 2.

the same apparatus; this is something that bleachers have desired and strived for, and which is especially difficult with cotton yarn owing to the resistance which the twisted yarn offers to the liquor.

As shown in the accompanying plan, the apparatus consists of three pairs of tubs, (b1) and (b2), (a1) and (a2), (c1) and (c2). These tubs are made of marble or granite slabs firmly joined, and with the joints well calked. The inside wall of (a1) and (a2) should be smooth, as it is in these that the yarn is placed. The tubs (b1) and (b2) are sunk below the floor so that they pro-

ject about twenty inches above the floor level. They are about forty inches square, and sixty-three inches deep. The tubs (a1) and (a2) are about forty-two inches square and sixty-three inches deep, and rest on top of (b1) and (b2), partially covering the latter.

The tubs (a1) and (a2) will each hold from 600 to 900 lbs. of cotton yarn. Above (a1) and (a2), and on the back side, rests a smaller tub which is divided by a partition into two compartments (c1) and (c2), each one of which being about twenty inches square and twenty-two inches deep. In each of the tubs (c1) and (c2), also in (a1) and (a2) on the front side and just above the bottom is a hole about three inches in diameter, in which lead or copper bushings are placed; in these bushings rubber pipes are fastened so that the bleaching material can be conducted to either of the lower tubs. The dotted line (k) represents a raised platform reached by steps and on which the workman stands. The pumps (d1) and (d2) are used to pump the bleaching liquor from (b1) and (b2) into (c1) and (c2), and from these tubs it flows into the tub (a) through the yarn back into the tub (b).

(e e) represent two high pressure kiers each with a capacity of about 1200 lbs. cotton yarn; (f) is a wooden tub for washing the yarn by hand; (g) is a washing or blueing machine; (h) a hydro-extractor; and (i) a sizing machine.

The method of using this apparatus is as follows: The yarn is placed in layers in the kiers (e e) and is treated to a solution of caustic soda varying from 1¼ to 3 degrees, for four to six hours, under a pressure of 12 to 15 lbs. After rinsing the yarn and allowing it to drain well, it is placed in the tubs (a1) and (a2); on top of the yarn a thick perforated copper plate is placed, and this plate has a border raised about an inch and a half around the edge. From 250 to 350 gallons of the lime solution is prepared in (b1), the strength varying according to the requirements of the yarn. This lime solution is then pumped into (c1), from which it is allowed to run through the rubber pipes into (a1), and passes through the perforated copper, through the yarn in (a1) back into (b1). This circulation of the bleaching liquor is maintained for about four hours. Care should be taken that the liquor flows uniformly through the perforated copper, so that all parts of the yarn may be treated alike. Strips of wood are placed under the perforated plate to enable the operator to watch the fall of the liquor and see that it is dropping uniformly on the yarn. It is a good plan to cover the bottom of (a1) and (a2) with a layer of small round pebbles; this facilitates the passage of the liquor from (a1) and (a2) into (b1) and (b2). When the yarn has been sufficiently treated with the lime solution, the circulation is stopped, and the yarn allowed to drain. The rubber pipe from (a1) is then connected with the drain, and by suitable pipe connections over (c1) water is allowed to run for about fifteen minutes through the yarn and into the sewer.

The yarn in (a2) is now treated with the lime solution in a similar manner. The lime soluton in (b1) is brought up to the proper strength by the addition of new material, and the rubber pipe is adjusted to carry the liquor from (c1) into (a2), and from (a2) into (b1), so that the pump will start the circulation of the lime bleach through (c1) and (a2) back into (b1).

In the meantime the yarn in (a1) has been rinsed sufficiently and allowed to drain, and is now ready for the sour. From 250 to 350 gallons of sulphuric acid solution from ¾° to 1° Be. is prepared in (b2) and connections made from (c2) to (a1) and thence to (b2), so that the pump will start the circulation of the acid through (c2) and the yarn in (a1), back into (b2). This circulation of the acid is allowed to continue from ½ to ¾ of an hour. The acid solution in (b2) can be used again by adding the necessary acid to bring it to the required strength. After the yarn has been soured sufficiently

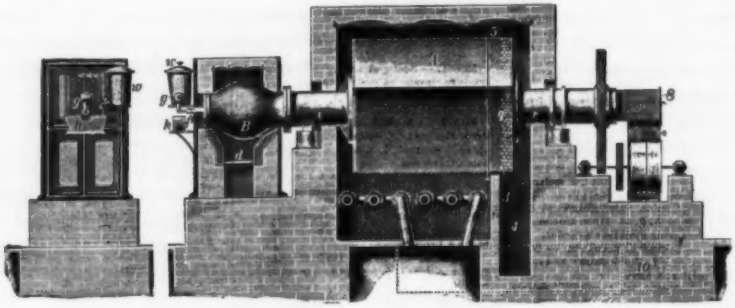
the rubber pipes are connected with the sewer so as to rinse the soured yarn with water for about an hour. The yarn in (a2) is rinsed and soured in a similar way, and this completes the bleaching process.

The material is then taken out and blued and sized in the usual way. If a very clear and bright bleach is desired, it is advisable to wash the yarn by hand with a soap solution in the tub (f) and then rinse it in clear water in the washing machine before bluing and sizing.

Yarn such as Maco, which is very difficult to bleach, should be treated a second time in a kier with a weak solution of soda; generally, however, this is not necessary, as the method described will give a bleach sufficient for all practical purposes.

the shaft, and is heated by a flame at (d). The acid is first carried into the globe, where it is converted into gas, which passes through the pipe (i) into (A), where it effects the carbonizing of the material. The acid is introduced by an automatic arrangement consisting of a small pipe (f') at the end of the globe. At the end of this small pipe a scoop or spoon is fastened, and the device revolves with the shaft; as the spoon descends it is filled with acid from the tank (h) into which it dips. Upon rising an automatic device in the pipe permits the acid to run into the globe, where it is vaporized by the heat of the flame and passes to the carbonizing drum.

(W) is a tank from which the holder (h) is filled with acid. Fig. 1 is a sectional view of the machine; and Fig. 2 is an enlarged view of the device for feeding the acid. L'Industrie states that several hundreds of these machines are being installed in different parts of Europe, and are proving to be a great improvement over old methods, both in respect to efficiency with which the carbonizing is done, and the economy of fuel and floor space.



RAW STOCK AND RAG CARBONIZER.

Machine for Carbonizing Raw Stock and Rags.

The accompanying illustration shows a machine now being built in Europe for carbonizing wool and rags. The material to be carbonized is placed in the drum (A) which is mounted on a revolving shaft and enclosed in a chamber which is heated by hot air passing through the pipes under the drum, as shown in the illustration.

The builders claim that one advantage of this machine consists in vaporizing the acid outside the carbonized chamber at the end of the hollow shaft on which the drum is mounted. A globe (B) forms a continuation of

The Tendering of the Cotton Fibre by Oxalic and Cyanic Acid.

An investigation made by A. Scheurer and reported by the Soc. Ind. de Mulhouse, relates to the destructive action of oxalic and cyanic

acids when used in calico printing. For the experiments with oxalic acid, a printing paste was made containing 20 grms. oxalic acid per litre of gum tragacanth thickening.

Calico printed with this paste and exposed for four hours in the laboratory at a temperature of 16-18° C. lost 3 per cent. in strength, while in three days and three nights it had lost 7 per cent. Exposed for four hours in the drying chamber at 45-48° C., the strength diminished by 11.5 per cent., while if the time of exposure was prolonged to three days and three nights under otherwise the same conditions, the tendering amounted to 30 per cent. The same fabric lost 32 per cent. in strength on steaming.

By the addition of 5 per cent. glucose to the same printing color the tendering in the drying chambers was reduced to 20 per cent., and in the steaming process to 28 per cent. Cyanic acid does not tender in steaming, but in the drying chamber its action is greater than that of oxalic acid.

In the discussion following the reading of the report, Wehrlin pointed out that the addition of glycerine to the printing paste not only diminished the destructive action of the oxalic acid, but that the goods were never brittle on leaving the drying chamber.

The Effect of Sulphur Colors on the Cotton Fibre.

Recently the textile trade in Germany has been interested in reports that cotton fibre had been injured when dyed with the sulphur colors. The only foundation for these statements were a few cases where this class of colors had been improperly applied.

The introduction of modern dyes has simplified the work of the dyer to such an extent that there is danger of manufacturers assuming that these colors can be successfully used without the exercise of ordinary care. The Leipziger Monatschrift publishes a letter from Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, on the subject as follows:

"As the trade has been disturbed by grossly exaggerated reports of injury to the cotton fibre by the use of sulphur colors in a few cases during the past month, we desire to state clearly our views on this matter.

"Although we have sold during the past five years thousands of casks of these dyes under the name of Katigen colors we have not received a single complaint as to their effect on the fibre. This fact is sufficient to prove that injury to the fibre can occur only as the result of unusual conditions, and that to assert that sulphur colors attack the cotton fibre is to discredit in a thoughtless manner a class of dyes of the very highest value in cotton dyeing. We have been called upon to investigate the cases in which injury to the fibre resulted from the use of sulphur colors, and to establish the conditions under which there is a possibility of such injury.

"1. A weakening of the fibre during the dyeing operations is out of the question; no injury to the cotton can be proved to have resulted from the sulphide of soda; on the contrary the one bath method of dyeing results in an increase in strength of 12 to 15 per cent.

"2. Sulphur colors require under certain conditions an after treatment with metallic salts. If our directions for this treatment are followed, namely, 2 to 3 per cent. bi-chromate of potash, 2 to 3 per cent. blue vitriol or alum, 2 to 4 per cent. acetic acid in a bath at 50 degrees C., the strength of the fibre will remain unchanged; that is to say, it will neither be increased nor diminished. Arbitrary alteration of our directions, such as the use of too strong solutions of the metallic salts, the addition of sulphuric acid and after treatment at high temperatures, will injure the cotton and should therefore be avoided.

"3. A rotting of the dyed materials while in storage has never been dis-

covered, nor has it been possible to bring this result about even in an experimental test. The sometime accepted theory of the gradual conversion of the sulphur by oxidation into sulphuric acid has never been proved or even demonstrated by experiment as being probable. All tests under conditions the most favorable for such conversion have given negative results.

"4. There is, however, a time in the treatment of the dyed goods when under unfavorable conditions the fibre may be injured. Such injury is to be looked for when the goods are subjected to a high temperature with or without pressure, such as may occur in calendering, pressing, steaming, etc. Colors dyed in one bath without metallic salts or an after treatment with mineral acids withstand heat and pressure as well as undyed cotton. If, however, the dyed cotton has been treated with metallic salts or mineral acids (as in the case of half wool goods), the goods may be injured by careless pressing or calendering. This result, however, is disclosed at once when the goods are finished. There is no proof that such injury occurs during storage of the material.

"5. We have found a simple method of avoiding the possibility of injury as described in section 4; it consists in treating the goods in a weak alkaline solution; this can be done by adding soap, soda, ammonia, etc., to the rinsing bath. According to all of our observations no injury to the dyed goods has been caused by heat and pressure unless the temperature has been reached at which undyed cotton is injured. This method of treatment has been patented by us and we willingly give users of our Katigen colors permission to employ it. We deem it in the interest of the whole textile industry to discuss clearly and intelligently the important question of injury to the cotton fibre, and point out the means for its prevention."

Bleaching Wool With Sulphurous Acid or Sodium Bisulphite.

When wool is bleached with a solution of sulphurous acid or of sodium bisulphite the same process goes on as in sulphuring. Their action is, however, usually preceded by a treatment with permanganate of potash. Many dyers prefer to use sulphurous acid in solution to employing it in the gaseous state, and the advantages are especially evident with piece goods. It admits of much more constant supervision than is possible with gas bleaching, and more rapid stopping in case of need. There is also much less risk of inhaling the fumes of sulphurous acid. The process is simplicity itself. All that has to be done is to soak in the solution for at most 24 hours, and then to rinse. The bisulphite is used of a strength of about 20 deg. B, and after soaking in this for from 10 to 15 hours the goods are passed through a bath of sulphuric acid at 4 deg. B.

For bleaching wool with permanganate and sulphurous acid, it is best to use three baths, which can be fairly strong and be used over and over again. The first contains about one-tenth per cent. of permanganate and a trace of soda, to make it just alkaline. After two hours or so in this the wool is left exposed to the air for a short time, and then, without rinsing, goes to the second bath which contains 2 to 3 per cent. of sulphurous acid, or is a solution of bisulphite of from 2 to 3 deg. B. strength. Both these baths are used cold. On rinsing after the second bath the goods still have a brownish shade and that is removed in the third bath, which is a repetition of No. 2.

Sodium bisulphite is better than sulphurous acid, as it removes the brown oxide and manganese from the fibre better. Thorough final rinsing is essential. For the permanganate bath metal rollers are better than wood.

A very good plan is to replace the third bath given above by a nearly boiling bath of oxalic acid

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc, we will charge the enquirer with the cost of the investigation.

Sizes of Men's Ribbed Union Suits.

Editor Textile World:

Can you give us the proportions and sizes for men's ribbed union suits, standard measurement?

Schnee (140).

We refer our correspondent to the article in this issue on sizes of men's ribbed union suits, which we think will give you the desired information.

Carbonization by Hydrochloric Acid Gas.

Editor Textile World:

Please advise where we can purchase a Hydrochloric Acid Still, such as is used by shoddy manufacturers for carbonizing rags, and also how it is used?

C. F. L. (141).

As far as we can learn there is no such machine manufactured in this country, carbonization being generally affected by means of sulphuric acid. There are only two or three hydrochloric acid plants here today in practical operation, and their machinery we have reason to believe was imported from England. If, however, this statement is too sweeping and there are manufacturers in this branch, we shall be very glad to put them in communication with you on their writing to us.

In regard to carbonization by means of hydrochloric acid gas, the stock is placed on screens in a practically airtight room and is exposed to the fumes which pass up through for several hours. The temperature is then raised to about 215 degrees for a short period, when the stock is allowed to cool.

In carbonizing wool by this means, there is a tendency to give it a yellowish tinge, which necessitates washing, and for this reason, rags are more often treated with hydrochloric acid than wool.

As there is yet some question as to the complete success of this process, it has been but little used in this country.

Book on Weaving.

Editor Textile World:

Where can I get a book on weaving woolen goods, such as dress flannels, etc.?

Golden Gate (130).

Beaumont's Woolen Manufacture would be a good book for this purpose. It contains several sections devoted to the subject of weaving; the price is $2.00, and we can supply it if desired.

We have recently received a copy of a German book, entitled, Methodik der Bindungslehre der Schaftweberei, by Franz Donat. The reading matter of this book is in the German language but owing to the many elaborate illustrations of weaves, it is well worth its price, even to a mill man who does not understand the German language.

We have examined this book very carefully, and consider it to be one of the best of its kind. The weaves are shown in colors, some of the drafts having as many as five colors, which show the peculiarity of the texture much better than the ordinary black and white diagrams. The price of this book is $2.50, and we can import it if desired.

Marking Ink.

Editor Textile World:

Where can I purchase good marking inks to mark sheetings and shirtings? I want a dark blue. The ink I am using is too light and leaves too much of a paste on the goods.

Stamp (128).

A full line of marking inks, together with stamps, can be obtained from Wilfred Wells, 505 Lehigh Ave., Phila. Pa. If a fast color is required, it will be necessary to use black, as the other shades are very apt to come out in washing.

Machine for Making Lace Curtains.

Editor Textile World:

How much would the machines for making lace curtains cost, and is lace curtain manufacturing a business in

which a man with small capital could easily engage?

Curtain fixture (137).

The machines for making lace curtains are very expensive. They are built in Europe, and cost landed in this country about $10,000 apiece. A census of the lace curtain manufacturers a few years ago disclosed nine concerns with a capital of about $2,000,000 and a weekly production of about 75,000 pairs of curtains.

Both fine, medium, and coarse yarns are used for the manufacture of curtains, according to the grade desired. We would not consider it advisable for a man with small capital to engage in this business. The machinery would be very expensive to start with, and an ample working would be required in order to make it a success.

Finishing Hosiery.

Editor Textile World:

What is the cheapest and most generally used method of finishing hosiery, whether by the oxydizing or singeing process?

Oxygen (136).

A practical dyer, who has had experience in this line of hosiery finishings, says: "There is much difference of opinion on this point. I believe the singeing method is the best and cheapest, because the oxydizing method is very apt to tender the goods. I have had very good success, however, by oxydizing for the finish, and afterwards chroming and softening in an olive oil emulsion, made up with olive oil soap, olive oil, lard oil, and sal soda."

In the May issue of the Textile World you will find an article on page 908 in which a patented process for finishing hosiery is described. We are unable to give you reliable figures as to the comparative cost of the singeing and oxydizing methods.

We understand that many up-to-date aniline black concerns are using the singeing method. Each one has its advantages and disadvantages, and each manufacturer will have to decide which one is best suited to his purpose, and the peculiar conditions existing in his mill.

Glove Cutting Machine.

Editor Textile World:

I want to buy the latest improved machine for cutting out canvas gloves. Please state price, with full description, and number of dozen a machine will cut.

Gant (134).

So far as we know, this class of gloves is cut in the same way that kid gloves are cut; i. e., by cutting dies with mallets or presses. We are not familiar with any other class of machinery for this purpose. If there is such a machine, we should be pleased to place the builder in correspondence with our inquirer. Thomas Kennedy of Cohoes, N. Y., makes cutting dies.

Crimping Machines for Facings.

Editor Textile World:

Can you inform us where we can get a machine for crimping the edgings of facings for underwear?

Crimp (135).

The samples submitted show an idea that is new to us, but a very good scheme. The facings after being folded on a band folder such as manufactured by Thomas Kennedy, Cohoes, N. Y., are not sewn on the edges, but apparently crimped or stamped in such a way as to give an attractive finish. We are rather inclined to think that some manufacturer has been ingenious enough to make some attachment of his own for this purpose, but if there is a machine on the market for doing this work, we should be glad to know of it.

Direct Dyes on Bleached Cotton.

Editor Textile World:

Is it practicable to use direct dyes on bleached cotton?

Church (133).

Somewhat fuller shades are obtained with the direct dyes on unbleached than on bleached cotton. It is advisable to neutralize the material before applying the dye. Some of the direct dyes are sensitive to acid, and others, on the other hand, are effected injuriously by alkali, so that the treatment in preparing bleached goods for the direct dyes must be varied according to circumstances. We understand that these dyes are being used on bleached cotton with satisfactory results.

Bleaching Raw Cotton.

Editor Textile World:

We manufacture cotton batting, and the different lots vary in color. What will bleach or whiten them?

Pure White (138).

The chloride of lime bleach is extensively used for bleaching cotton. The process is as follows:

The cotton is boiled for two or three hours in a solution of caustic soda, using five pounds of caustic for each one hundred pounds of cotton to be treated. This boiling is for the purpose of removing the fatty matter. The cotton is then soaked in another bath of chloride of lime, standing at 1 or 2 degrees. The strength can be varied according to the time allowed for the work. The cotton is left in the chloride of lime bath until it is bleached sufficiently, then taken out and rinsed in clear water to remove any excess of lime. It is then neutralized, and for this purpose B. and L. anti-chlorine gives very satisfactory results. It is not necessary to rinse the cotton after treating with anti-chlorine, as is the case when acid is used for neutralizing. It is very important that the goods be well neutralized as any excess of lime rapidly destroys the fibre. On account of the liability of injury to the material when bleaching with chloride of lime, manufacturers have sought to find a substitute and for certain purposes peroxide of sodium has given good results. In the July, 1900, issue of the Textile World, there appeared the first of a series of articles on bleaching cotton. We advise our correspondent to read them.

New Publications.

Weave Lexicon for Harness Weaving. By Franz Donat, A. Hartleben, Wien. 160 pages; price, $2.00. This book contains 4100 different diagrams of weaves for the harness loom. The 160 pages contain no reading matter, but are filled with the weave diagrams. It will prove a valuable book to the designer and weaver, who will find here weaves for a vast number of different effects. An inspection of these colored diagrams will prove an inspiration to the designer. He will see here the possibilities of harness weaving and not only find the weaves exactly suited to his needs, but receive suggestions which he can amplify to produce original designs.

The Chemistry of Fire and Fire Prevention. By Herbert Ingle, F. I. C., F. C. S., Lecturer at the Yorkshire College, Leeds, and Harry Ingle, P. H. D., V. S. C. Spon & Chamberlain, New York, N. Y. Price $2.50.

The author seeks in this work to give his readers a handbook of fire and fire prevention. It is based upon two courses of lectures delivered before an audience composed of men interested in fire insurance, and on account of the frequent calls for a work devoted exclusively to fire and fire risks, the author decided to publish the lectures in book form. The following is an abstract of the table of contents: 1. Early views of fire, effect of the air on combustion; 2. Explanation of chemical terms; 3. Oxygen; 4. Coal gas; 5. Fuel; 6. Illuminants; 7. Inorganic industries; 8. Explosives; 9. Oils; 10. Technical applications of oils; 11. Volatile solvents and coal tar products; 12. Paint and varnish making; 13. Textile manufactures; 14. Miscellaneous fire risks; 15. Fire prevention and extinction; Appendix, giving tables of the boiling, flash, fire and the ignition temperatures, and some of the more commonly occurring substances.

All persons having the care of property liable to damage by fire will find in this work much valuable information in regard to the causes and extinction of fire. The fire loss of the country is something enormous, and we believe that a study of this book will do much toward teaching property owners better methods of fire prevention and fire extinction.

Steam Boiler Economy. By Wm. Kent, A. M., M. E. John Wylie & Sons; 452 pages; illus.; price $4.00. This is a very carefully written work on the care and management of steam boilers. The author is specially well equipped for handling this subject, as he was for a number of years in the employ of the Babcock & Wilcox Co., making comparative evaporative tests of different makes of boilers in various parts of the country and with different kinds of coal. In addition to his extensive practical experience the author has been trained theoretically.

The book is made specially valuable by the large space devoted to fuel economy. The following is an outline of the table of contents: Chapter 1; Statement of principles and definitions, with a survey of the ground covered in the book. 2; Chemistry of fuel and combustion; the author believes that the discussion of this point is more complete than that given in any other work. 3; Coal and its heating value, with a table of analysis and heating values of American coal. 4; Treatise on the coal fields in the United States; this subject is considered owing to the close relation between the economy of the boiler and the quality of the coal used. 5; Consideration of tests as to the heating values of American and foreign coal. 6; Fuels other than coal, including peat, oil, gas, vagasse, etc. 7; Furnaces, methods of firing, smoke prevention, mechanical stokers, forced draught. 8 and 9; Discussion of the boiler itself and the efficiency of the heating surface. 10; Various types of steam boilers now on the market. 11; Boiler horse power and heating surface. 12; Points of a good boiler. 13; Boiler troubles and boiler users' complaints. 14; Boiler testing. 15; The results of boiler tests and conclusions drawn from them. 16; Properties of water and steam; factors of evaporation; chimneys and a table of chimney proportions. 17; Miscellaneous assortment of subjects relating to boiler economy.

Steam boiler users will find this work to be a valuable handbook for reference and study.

The Ramie; Its Culture, Preparation, and Industrial Uses. 107 pages; Revue des Cultures Colonials, Paris, France. Price $1.25.

This volume contains the proceedings of the International Ramie Congress which was held last year in Paris. The most experienced specialists in the ramie industry met at this Congress.

Among them were numbered growers of ramie, inventors and manufacturers of machinery for decorticating the fibre, spinners and weavers.

The papers read and discussion on the various points abound in valuable information as to the different varieties of ramie, its value, the best climates and soils for its cultivation, the expense of starting the cultivation of the plant, crops, preparation, markets and the selling price of the products.

The work also contains the proceedings of the meeting held to discuss the various machines for decorticating ramie, and which was held in October, after the last session of the Congress. This section contains numerous illustrations of the machines and gives statement of the quantity and value of the various products obtained from them. It also gives the decisions of the jury. The reader will find collected in this book a vast amount of information on ramie culture and manufacture, a subject about which very little is generally known. It is written in the French language.

English Cotton Spinners' and Manufacturers' Directory. John Worrall, Oldham, England. Published in large quarto and pocket edition. Price $2.00.

We have received a copy of the seventeenth edition of this Directory of English mills containing a list of the cotton spinners and woolen manufacturers, bleachers, printers, etc., giving the number of spindles and looms of each concern, counts spun, goods manufactured, pay days, telegraphic addresses, and telephone numbers. In addition to the list of manufacturers arranged by districts a classified list is given in which the firms engaged in each branch of the textile industry are arranged alphabetically.

The list of cotton spinners is tabulated, showing at a glance whether they spin fine, medium, or coarse counts, and the numbers of the yarn spun. The aggregate number of cotton manufacturers, spindles and looms are summarized by districts, and aggregate 1775 firms, 43,119,580 spindles and 651,023 looms. A table giving the approximate number of spindles and looms for each year since the publication of this Directory shows 38,410,067 spindles in 1882, and 43,119,580 spindles in 1901. The increase took place between 1882 and 1892. Since the last named year the number has remained practically stationary.

Theory and Practice of Damask Weaving. By H. Kinzer and K. Walter. Friedrich Vieweg & Son, Brunswick. Price $2.50.

This is a recently published work written by two German professors in the Schools of Jagerndorf and Rumburg. The art of damask weaving is a subject that has received but very limited consideration at the hand of writers, and then only in sections of works devoted to the general subject of weaving. This work will therefore fill a pressing want. It is written from a theoretical standpoint, and the authors, both well versed in the art of damask weaving, have had the text carefully read and revised by Herr C. A. F. Knorr, Chemnitz, to ensure the correction of any errors that are so apt to creep into a work on a subject of this character.

The reading matter fills 104 pages, the contents of which can be but imperfectly judged by the following brief abstract: 1; Introduction to the art. 2; Practice of damask weaving. 3; Combination of the jacquard with the damask machine. 4; Damask without the cross shed. 5; Various damask machines.

In addition to these pages of reading matter, 18 tables containing 152 diagrams are added. The text is in German.

Practical Guide for Cotton Spinning, by Emili Riera, Barcelona, Spain. Price, $2.00. This hand-book is written in Spanish and contains rules for calculations in cotton spinning. The work is illustrated with drawings of the different parts of cotton spinning frames and mules. Comparative yarn tables are given, showing the equivalent sizes by the English, French and Spanish systems of numbering, also tables of the various weights and measures including the metric system, tables showing the elasticity and strength of different sizes of cotton yarn, length of staple of the different grades of cotton, and the book concludes with a glossary in which the Spanish terms with their English and French equivalents are placed side by side.

It will undoubtedly prove a valuable hand-book for mill workers who understand the Spanish language.

The Raw Materials of the Vegetable Kingdom. By Dr. Julius Wiesner, professor of Anatomy and Physiology of Plants at the University of Wien; second edition revised and enlarged; Wilhelm Engelmann; 2 vols.; price per vol. $8.00.

We have received the first volume of this elaborate German work, which is devoted exclusively to the raw materials of the vegetable kingdom. The author begins his introduction with the following quotation from Helmholtz: "The possession of knowledge should not be the sole object of man's existence. Knowledge should be put to practical use." This work places before the reader in shape ready for reference a vast store of information concerning the raw materials found in the vegetable kingdom. It is evidently compiled with great thoroughness and after careful research. The first volume contains 795 pages well printed on a good quality of paper. It is divided into sixteen sections as follows: 1. Gums; 2. Resins; 3. Caoutchouc; 4. Opium; 5. Aloes; 6. Indigo; 7. Catechu group; 8. Vegetable fats; 9. Vegetable wax; 10. Camphor; 11. Starch; 12. Yeast; 13. Sea-weed; 14. Lichens; 15. Gall-nuts; 16. Barks. As it is practically impossible for one man to compile single handed a work of this character, Dr. Wiesner has called to his aid a number of professors of high standing in the various German institutes of learning, to contribute the articles on special subjects.

The work is well illustrated, and is another example of the thorough manner in which technical subjects are treated by German writers.

Madder and Indigo. By G. F. Jaubert, Masson & Co., Paris; 162 pages; price, $1.50. This book is one of the series of hand-books of scientific subjects published by this house. It begins with the history of the culture of madder, which

is followed by chapters on the following subjects: botanical classification; manufacture of powdered madder; analysis of madder; derivatives from madder; alazrine or artificial madder; statistics of the madder industry. The second part of the work is devoted to indigo, giving a history of indigo culture; extraction of indigo; production and commercial grades; distinctive characteristics. The third part deals with artificial indigo, and refers to the more important patents issued for processes of manufacturing this product. The work is in the French language, and can be imported through this office.

Treatise on the Theory and Practice of Weaving. By Paul Lamoitier. 563 pages, 315 illustrations. Ch. Beranger, Paris. Price $7.50.

The object of the work is stated by the author in the following words taken from the first chapter: "We know by personal experience the difficulty experienced in getting into touch with the practical details of textile manufacturing on account of the deficiencies of text books, which devote too much space to the theory and too little to the practice of the art, and because those who are versed in the business seek to conceal what they know. We hope in writing this treatise on weaving to assist those whose future lies in this industry. We have endeavored to lay down as clearly and as precisely as possible the rules and data that they will find necessary."

The first part of the work treats of textile raw materials and yarns, definitions, calculations, analysis of cloth.

The second part is devoted to the mechanism of weaving; here the author describes the operations of winding, spooling, warping and sizing yarn, drawing in and twisting of warps; the hand and power looms each have a chapter given to their consideration.

The third part is entitled The Art of Fabrication; the first section is a study of fundamental weaves, in which the different weaves are classified and clearly described and illustrated; the second section treats of derivative weaves; section three is devoted to double and multiple fabrics; section four is upon the subject of designing and the employment of patterns, shades and materials for different effects; section five is devoted to the methods of producing different effects in the finishing processes.

The fourth and last division of the book deals with dyeing and finishing. We consider this work to be a very valuable addition to the literature of textile manufacturing. It is written in the French language.

Fall River and Its Manufactories. By Henry H. Earle, Fall River, Mass.

This interesting little hand book opens with a well written sketch of Fall River, its location, water power, and growth in cotton manufacture. This is followed by a list of the Indian names in Fall River and vicinity and numerous tables relating to the population and valuation of the city, fluctuations in the prices for print cloths, weekly production of the various manufacturing concerns, stocks of print cloths on hand in the United States during past years, review of the Fall River cloth market, list of Fall River corporations and their treasurers, pay days and other valuable statistical tables relating to the cotton industry both of this country and foreign countries. A list of the various corporations giving the officers of each, and dates of annual meetings, is given.

Transactions of the New England Cotton Manufacturers Association, published by the Association, Boston, Mass.

This is the regular publication giving an account of the proceedings of the seventieth annual meeting held last April in Boston. It contains the usual information given in this annual report, including the various papers read at the time.

Bulletin of National Association of Woolen Manufacturers, published by the association, June, 1901.

The frontispiece of this quarterly report gives a portrait of the late Wm. H. Haile. The reading matter begins with an article entitled: Wool vs. Cotton and Shoddy; followed by A Century of Textile Industries; The New Engand Wool Manufacture; Obituary Notices; Editorial and Industrial Miscellany; Treasury Department Decisions; concluding with a report of the Boston wool market.

Business Literature.

Circular of the School of Industrial Art, Pennsylvania Museum, Philadelphia Textile School, 1901-02, 25th season.

We have received a copy of the circular of this school. It gives the usual information, such as names of officers, trustees and committees. An interesting sketch of the Philadelphia Museum is followed by particulars in regard to courses of study and requirements for admission. There are numerous illustrations of the interior of the school showing machinery, designs, etc.

Catalogue number 26. New York Blower Co.

This is an attractive illustrated catalogue and price list of the heaters, blowers and fans manufactured by the New York Blower Co., Bucyrus, Ohio. Valuable tables are added showing the capacity of heat to absorb moisture at various temperatures, area and circumference of circles, circles and squares of like areas, equalization of pipe, weight and gauge of round rectangular iron pipe, gauges for sheet steel, pressures and gauge of round rectangular iron water, properties of saturated steam, sizes of chimneys, etc.

New Color Cards.

Benzo Fast Blue B. Farbenfabriken. The manufacturers of this dye sum up its properties as follows: Fastness to light, very good (better than indigo); to washing, same as the Substantive Blues; to acid and alkali, good; to chlorine, moderate.

We have received a sample card showing seven shades colored with this dye in cotton yarn, raw cotton and cotton, half woolen and half silk cloth.

Benzo Fast Orange S. Farbenfabriken. The colors obtained with this dye are recommended as being much

faster to light than Benzo Orange R and as fast to washing as the other substantive Oranges. They offer a good resistance to the action of alkali, and are fast to acid, even dilute mineral acid. The fastness to chlorine is only moderate. The samples shown are very bright and possess full rich tones. They are shown on loose cotton, both mercerized and unmercerized cotton yarn, sateen, half wool and half silk cloth.

Benzo Fast Scarlet 4 B S and G S. Farbenfabriken. Both of these brands are said to produce colors which are considerably faster to light than Benzo Purpurine 4 B. The fastness to washing is the same as the last named dye, while the colors offer a good resistance to the action of acids and alkalies. A very weak resistance is offered to chlorine. The colors shown in the sample card are on both mercerized and unmercerized cotton yarn, loose cotton, sateen, half wool and half silk goods.

Alizarine Green K N. Farbenfabriken. This is a new dyestuff belonging to the same class as Alizarine Green K O, which has been on the market since April, 1900. The feature of this new brand is its bluer and duller shade when dyed direct or with after treatment. It is faster to acids, but otherwise possesses the same properties as the old K O quality, and the directions for using the old grade apply to the new dye.

Alizarine Green K N is cheaper than the old K O brand.

Naphtole Black 2 B. Farbenfabriken. This color is dyed with bisulphate of soda, or Glauber's salt and sulphuric acid, and gives a bright blue black shade. It is claimed that the color is very fast to water and light, but answers only moderate demands in respect to fastness in fulling. The manufacturers recommend it chiefly for piece dyeing. They state that it gives good results in dyeing woolen yarn and hats, as well as braids and cords. In combination with soluble blue, acid violet, or acid green, it gives cheap navy blue shades on woolen and worsted cloth.

The dyed samples shown by the manufacturers of Naphtole Black 2 B contain both worsted and cotton yarn. The dye has no effect upon the cotton, which comes out a pure white; consequently this dye is well adapted for picques.

Industrial News.

—H. G. McKerrow & Co. are shipping this week to the Hadley People's Mfg. Co. of Siler City, N. C., Slubbing and Roving frames of Messrs. Tweedales & Smalley's make.

Manufacturer's Agent.

Thomas H. Doane, 233 and 235 Monroe St., Chicago, Ill., is prepared to handle mill accounts direct with the trade. He has facilities for taking on a few more woolen goods, and should be pleased to hear from manufacturers who wish to be well represented in that field. He has ample room for storage, and is prepared to furnish highest references on request.

Removal of Plant.

After a most careful consideration of sites, the B. F. Sturtevant Co. have recently completed the purchase at Hyde Park, Mass., of a tract of land, containing some 15 or more acres, and is preparing plans for the erection thereon of a large, up to date plant for the manufacture of blowers, engines, motors, forges, heating apparatus, etc. This purchase, although hastened by the recent fire which damaged the works at Jamaica Plain, Mass., and which will be eventually abandoned, is the natural outcome of the rapid growth of this concern during the past few years, and of the congested condition of the present plant, in which increased facilities could not be advantageously provided. The new site is on the same railroad line, the N. Y., N. H. & H. R. R., only five miles from the old plant and less than ten miles from Boston. It is admirably located; 1300 feet along one side abut upon the railroad with all desired switching facilities; an ample stream of water marks the boundary on another side; a noted spring of remarkable purity is within the area; the high ground, which is practically on a level with the tracks, will accommodate buildings having a floor area of 750,000 square feet, ample for all needs of the immediate future, and the lower land furnishes abundant area for dumping. The new plant will be arranged to reduce to a minimum the labor cost of handling material, and will provide for its direct progress through the shop from foundry to shipping room. It will be equipped throughout with new modern tools and labor saving devices.

A New England Trio.

For years New England north from Boston has been frequented by the vacationist and health seeker. The first and most important feature which has made the region famous is the health-giving atmosphere; and this with delightful scenic surroundings, comfortable abiding places, an abundance of methods for diversion, coupled with unexcelled traveling facilities, suffice to make the territory a most superior and much sought outing place.

Northern New England is really divided into three principal resort regions, viz.: Mountains, Sea Shore and Lakes; and for six cents in stamps the General Passenger and Ticket Agent of the Boston & Maine system, Boston, will send you a trio of booklets, known as "Among the Mountains," "Lakes and Streams," and "All Along Shore," and with them you will get a tour book which is overflowing with information of benefit to travelers in Maine, New Hampshire and Vermont. This company issues a variety of illustrated descriptive books which are listed in a readable index, and if you want to know about them, drop a postal to the above address.

—The Harvin Hosiery Mill at Manning, S. C., are putting in the Dubois system of sanitary fast black colors and bleaching. They had already made arrangements for another so-called fast black formula, but discovering in time that it was a sugar of lead black, made the change.

Enlarging Facilities.

The New York Blower Co. has had an unusual record of success. The company was organized but little over a year ago and located its plant at Louisville O., in buildings which were thought to be entirely adequate for the business. In less than six months it was found necessary to double the capacity of the plant, and rather than build at Louisville, where the shipping facilities were not all that was desired, the company removed to Bucyrus, O., where a commodious and model factory building was ready for occupancy. Although the new buildings and equipments doubled the capacity, it is already found necessary to more largely increase, and more new buildings will be erected. The Louisville buildings, which were used temporarily, have been placed on the market, as all the manufacturing will be done in Bucyrus. The company also has offices in New York, Boston and Chicago. A new catalogue on heating and ventilating has just been issued by them which is a model in neatness and valuable on account of its comprehensiveness.

Incorporation of an Old Firm.

The G. Woolford Wood Tank Mfg. Co. report business as good. This company has a large and finely equipped plant at Darby, Pa., seven miles from Philadelphia, on the P. W. & B. R. R., and office in the Real Estate Trust Bldg., Broad and Chestnut Sts., Philadelphia. The business to which this company succeeds, was established about twenty years since by Geo. Woolford. Mr. Woolford's business grew to such an extent that he no longer felt it prudent to continue as an individual, hence the organization of the present company, with Mr. Woolford as president and the principal stock holder.

Within the past, since starting the new plant at Darby, the business has more than doubled, and their specialty now is large tanks for the construction of which the company is fully prepared. The main work room is 150 feet square and provided with all modern appliances, much of which is of special construction. All lumber is purchased direct from the mills and shipped without change to the large yards of the company at Darby. Their material is carefully selected. The best is used in the construction of their tanks, which now have a national reputation for excellency.

The object of the company is not to produce a cheap tank, but a good one at a fair price. Mill and dyers' work is a specialty of this company.

—The Liberty Cotton Mills of Liberty, S. C., are receiving this week several car loads of Tweedales & Smalley's card room machinery which will be installed at once.

—Messrs. Schwartz & McKerrow's fitter has been at the American Yarn Mfg. Co., Pawtucket, R. I., erecting the set of Monforts combing machines which this mill is installing.

Pan-American Hint.

QUICK AND INEXPENSIVE METHOD.

The great Pan-American Exposition has realized fully the expectations of the managers, while the great public is more than pleased with the artistic and inventive displays provided.

The creative genius apparent in the architecture of the many buildings is without equal, and the effects obtained through the marvelous color decorations are simply astounding. The landscape work has devolved the grounds into a perfect paradise. The exhibits are a chosen lot and far superior in comparison are they to those of all other expositions.

Buffalo as a city is a most delightful place, and excursions can be made in every direction to localities intensely interesting, but the greatest attraction save the Exposition is Niagara Falls, which is truly one of the marvels of the world. The Boston & Maine Railroad is making every inducement possible for the benefit of the tourist to Buffalo from New England. The rates are the lowest—the routes most numerous—line the most direct and its trains without question the best equipped of any from Boston. The General Passenger Department of the Boston & Maine Railroad, Boston, will, upon application, send you a Pan-American Folder, which is replete in information of service and is yours for the asking.

Fuel Economy.

We learn of the following orders which have recently been placed with the Green Fuel Economizer Co., for their economizers: B. B. and R. Knight, a repeat order for their plant at Manchaug, Mass.; the Brainerd and Armstrong Company at New London, Conn., an economizer to replace a similar make of machine; also the Crompton Company, Crompton, R. I., and Coronet Worsted Mills, Mapleville, R. I.

Improvement in Water Proofing.

A process, patented in France, for stripping the color from cloth and other materials consists in dipping the material in a solution of ammonia and copper by which materials are made water proof and at the same time colored green. The goods are then handled in a saturated solution of zinc cyanid and diluted ammonia. They are then pressed and dried, during which white copper cyanid and zinc oxyd are formed and the color stripped from the goods.

—The Peacedale Manufacturing Co., Peace Dale, R. I., have placed an order with the Green Fuel Economizer Co., to replace the same make of machine purchased 28 years ago, which is now giving out, but will be kept in use until the new Green Economizer arrives.

—Border City Mfg. Co., Fall River, Mass., have ordered with the Howard & Bullough American Machine Co., Pawtucket, R. I., Roving Frames. This is a repeat order.

The Morse Incandescent Lamp Adjuster.

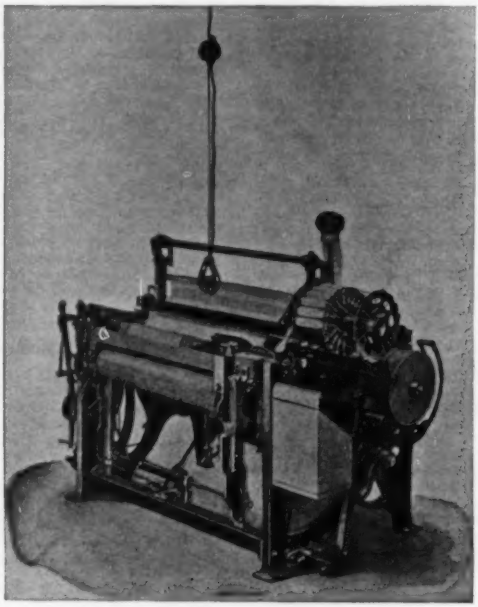
Nearly all the incandescent lamps in use in our mills are suspended by cords, as in this way they can be easily adjusted to the desired position. The only drawback to this method is the difficulty found in putting them out of reach when not in use. The usual device employed for this purpose is the wooden ball or so called peanut adjuster. The price of these are very low, but they are objectionable for the following reasons: First, it takes too much time to make the adjustment. Second, putting the cord through will bring considerable strain on the rosette, and many of the latter are thus broken or pulled off. Third, drawing the cord through the adjuster soon wears the insulation, causing short circuits and great danger of fire.

The last named objection is very serious indeed, and there have been recorded in the Textile World within the past year two very large fires which resulted from the short circuiting of the electric current where the insulation had been worn from the drop cord of an electric light.

Since the general introduction of electric lighting many devices have been invented and placed on the market for the purpose of adjusting the electric lamps. The objections to them have been that the best working ones were too expensive, while the others did not work properly or failed to meet the approval of insurance experts. It remained, therefore, for Louis A. Carpenter and Frank W. Morse of Boston, Mass., to invent and patent the Morse Adjuster, which is shown in use in the accompanying illustrations.

It is so constructed that it will adjust within a space of five feet any electric lamps suspended by a cord. It can be easily attached to any cable cord and its operation is practically instantaneous. It is made of non-conductive material, and has been approved by Boards of Fire Underwriters, Wire and Building Commissioners, and Electrical Experts.

These adjusters have been in use in the office of the Textile World for nearly a year and we can recommend them from practical experience. They can be seen daily at section M, Electricity Building, Pan-American Exposition, where the Incandescent Electric Light Co., of Boston, Mass., have on exhibition an adjuster for gasoline lamps as well as a line of incandescent lamp appliances. Their selling agent, Mr. George Lighthart, is in charge of the exhibit, and will be pleased to show them in operation. Further information concerning this device can be secured from the Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston, Mass.



A MORSE LAMP ADJUSTER OVER A NORTHROP LOOM.

Increase in Capacity.

The Vermont Spool & Bobbin Co., Essex Junction, Vt., are to make an addition to their mill, 56 by 40, and will put in a new water wheel, which will give them 125 H. P., taking the place of the old 65 H. P. wheel. They will rebuild the flume and probably will be obliged to shut down for a few weeks in July, but are planning to have the changes and improvements completed by the 22d of July, and with the added new machinery, can serve their friends and patrons more promptly than ever. Some other work will also be taken on, largely increasing their business. This concern is outside the combination.

Lowell Textile School.

The graduation exercises of this school were held on June 6th. Following is the program of exercises, which were well attended.

Music:—Hibbard's Orchestra.

Thesis:—N. T. Ewer; A Study of the Production of Turkey Red.

Thesis:—W. N. Marinel; Variation of Fly Frame Tension due to the Radial Link Action.

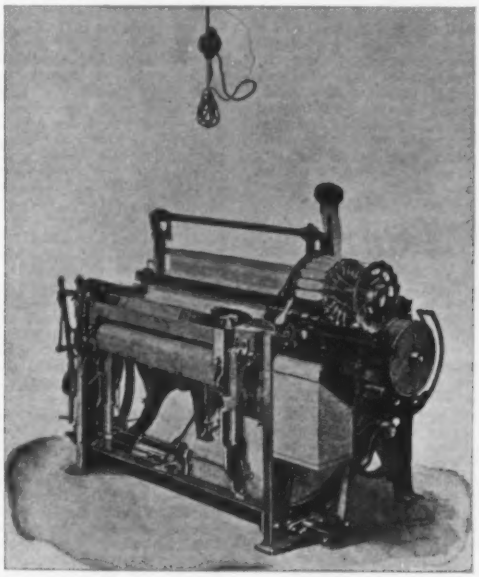
W. N. Marinel, I, No. Chelmsford, Mass.; Variations of Fly Frame Tension due to Radial Link Action.

W. R. Moorehouse, IV, Lewiston, Me.; The Machinery Used in the Art of Textile Coloring and Bleaching.

B. M. Parker, I, Raleigh, N. C.; Discussion of Fly Frame Cones.

A. H. Webber, IV, Beverly, Mass.; Comparison of the Results Obtained by Dyeing Wool with Logwood Chips and Logwood Extract on a Prussian Blue Bottom.

P. T. Wise, II, Malden, Mass.; Effect on Ratch on Breaking Strength of Single 28s Worsted Yarn.



A MORSE LAMP ADJUSTER OVER A NORTHROP LOOM (LAMP UP.)

Address:—J. W. C. Pickering.

Music:—Hibbard's Orchestra.

Thesis:—J. A. Currier; A New Device for Actuating an Oscillating Reed.

Thesis:—P. T. Wise; Effect of Ratch on Breaking Strength of Single 28s Worsted Yarn.

Science in Every Day Life:—William W. Crosby, Principal.

Presentation of Medal from N. E. Cotton Mnfrs. Association to B. M. Parker, George Otis Draper.

Presentation of Diplomas:—A. G. Cumnock, President.

Music—Hibbard's Orchestra.

GRADUATES AND TITLES OF THESIS.

Donald C. Buchan, II, Andover, Mass.; Knowles Head Motion.

John A. Currier, II, Andover Depot, Mass.; A New Device for Actuating an Oscillating Reed.

N. T. Ewer, IV, Lowell, Mass.; A Study of the Production of Turkey Red.

C. E. Foster, II, Lowell, Mass.; Jacquard Heads.

P. F. Kingsbury, Lowell, Mass.; Investigation of the Natural Impurities Contained in Cotton.

CERTIFICATES.

J. C. Minge—Cotton, Spinning and Weaving.

R. H. Bradley—Weaving.

POST GRADUATES.

Ida A. Woodies—Art Department.

Amy H. Goodhue—Art Department.

—Albert Birch, trading as Birch Brothers, Somerville, Mass., advises us that in view of some apparent misunderstanding and recent inquiries, he has received concerning the incorporation and increase of capital stock on the part of another concern in a similar line of business, he wishes to state that no increase of capital by sale of stock or incorporation is contemplated by his firm.

—The Plainfield Woolen Co., Central Village, Conn., are installing a new up-to-date boiler plant with water tube boilers and the Green Economizer.

The Graduating Exercises of the Philadelphia Textile School.

The commencement exercises of the Pennsylvania Museum and School of Industrial Art, of which the Philadelphia Textile School is an important department, were held on the evening of June 6th in Horticultural Hall, Philadelphia.

In the absence from the city of President Search, Vice-President Wm. Platt Pepper presided. He welcomed the audience with a few pleasant words, rehearsing briefly the story of continued success of the work in the different departments. There are now over 1000 pupils in the different branches. Mrs. E. D. Gillespie, chairman of the Women's Associate Committee, made a few congratulatory remarks to the graduating class, and Principal L. W. Miller gave a report of the past year's work. The address of the evening was made by Dr. Frank A. Hill of Boston, secretary of the Massachusetts State Board of Education, taking for his subject, "The Riches of a Scholarly Spirit."

He prefaced his address as follows: "I have been favorably and deeply impressed by what I have seen and learned today of the art and textile schools of the Pennsylvania Museum. I was prepared to be thus impressed, however, because of the glowing accounts which Mr. Bailey, our State Supervisor of Drawing in Massachusetts, had recently brought me of the excellent work doing here. In the textile industry, in particular, I have a singular interest. Possibly you will indulge me for a moment, if I say that it was my father's business. I was only five years old when he died, but his old-fashioned wooden mill in Biddeford, Maine, the waters of the Saco roaring beneath, the ancient carding, spinning and weaving machines, then modern and up to date, and on the banks of the river those quaint tenter-bars where the cloths were stretched to dry—these are childhood memories as vivid as any I am now storing up of the intensely modern and vastly superior plant of the Philadelphia Textile School. On the old homestead in New Hampshire, there still stands the little carding mill which my grandfather owned and where in the intervals of farming my father got his boyhood start. It is still in the family, and, though somewhat the worse for nearly a century's wear, still in occasional use. It is almost pathetic, the wheezy work of the rheumatic mill, the farmer still bringing to it his pittance of wool, the wife and daughters still plying the spinning wheel, and possibly the loom, in the farmer's home. It is the last leaf of the tree, but a leaf that refuses to fall; the spirit of the old New England homespun times, but a spirit proclaiming with its dying breath that it still lives. I feel very much as if I were bringing you the last good-bye of an expiring country cousin, and that I ought to be very solemn about it."

The speaker then went on to say in part: An eminent Englishman was once asked if a boy would be looked down upon at Eton for being industrious in his studies. "O no," was the reply; "not if he does something else well." There is a deeper philosophy in this reply than is apparent at the surface. There is something lacking in that head work that has no outlet in definite and profitable physical expression. Something lacking in that handwork that gets no aid from a well-stored and inspiring mind. And because of this something lacking, we have at one extreme the bookworm, with executive capacity undeveloped or atrophied, and at the other extreme that clod, type of all unthinking workmen, the man with the hoe, with large areas of the soul a desert. Each needs to fill out his life; each needs help from the other's territory.

. . . In our schools we are beginning to grasp, as never before, the conception that there cannot be satisfactory expression without cultivation of the soil from which it springs. Once it was deemed enough to teach the three R's, mere formal expression, with little back of it to express, in entire innocence of the fact that these are but the tools, and only a portion of them at the best, by means of which an education is required. Today we are enthroning the royal H's, the hand, the head, and the heart, and relegating the plebeian R's to their proper place as servants of these imperial masters, servants needing separate disciplining from time to time as their frailty demands, but, on the whole, best trained by being set at work about their proper business.

We are beginning to see, as never before, that our thoughts are dynamic; they tend to express themselves in action, some of it interior and subtle, but much of it exterior and obvious, energy that, like any other, may be dissipated or saved. The finest work in education lies in stimulating, gathering up, and making effective the energy that would thus express itself. We are also awaking to the deeper conception that improving physical expression reacts on the mental states that produced it to enlarge, widen, deepen, or otherwise modify them; and these states thus toned up tend to tone up still further the physical expression. Thus each side helps the other. Now we readily accept the potent influence of the mind in guiding the hand; but we have much yet to learn of the reverse influence,—that of the hand in moulding the mind. Ruskin neatly recognizes both sides when he defines art as the beauty of the artisan's soul issuing from his finger tips,—the handiwork gradually rising until it becomes artistic production, the artisan's soul gradually expanding until it blossoms out as the soul of the artist, each result powerfully aided by the other and neither possible without the other.

The speaker building up from this foundation, proceeded to show how the life of the student and the life of the artisan both need the stimulus of a pronounced scholarly spirit, the scholarly spirit meant being of that larger and more generous type that prompts people who sit in armchairs and read books to increased executive expression, and people who ply the hoe or tend the machine to increased intellectual expression. The problem of life is how to conduct one's business with sufficient singleness of purpose to make it succeed and yet to guard against the evils of such narrow devotion.

Young people, in particular, need to know that the trend of one's life slowly, but surely, brands itself into the very substance of the brain, and that the physical record with equal certainty makes it increasingly hard to vary from that trend. Here, in the strengthening

habits, are the real weavers of one's destiny. It becomes one, therefore, while there is yet time, while things are plastic and can be shaped, not to be content with a single prosaic pathway, some cerebral Wall Street, in the brain, but to lay out there something akin to a park system so that when the soul wearies of the one, it may find refuge and refreshment in the other.

The award of diplomas, prizes and certificates followed, diplomas being awarded in the textile school to the following: Armen Peter Aleon, Frederick Brown, John Paul Jones, Ellsworth Moore, James Voorhees Pomeroy, Frank Wilson Simons, Harris Aronson Solomon, Edward Dewey Bloom, Clifford Mills Hoff, Edward Mills Maclean, Charles Emmons Pervear, Jr., Robert Read Shillingford, Fred Roy Smith.

The Textile World's gold medal was awarded this year for the best thesis and work in connection with same, in the chemistry and dyeing department, to Charles Earle Washburn of Blackinton, Mass., with honorable mention to Frederick Otto Zenke. The thesis on "Action of Caustic Soda on Wool" showed a marked degree of excellence and the task of the judges in deciding between the aspirants was a difficult one. The thesis is printed elsewhere in this number. The medal was presented this year in person by Mr. Henry G. Lord, publisher of the Textile World, which has offered this medal for a number of years, and the following special prizes for textile school were awarded, viz.:

For best executed work in Jacquard Design, 3d year, awarded to Ellsworth Moore.

For best work in Color Harmony and Design, awarded to Frederick Lyne Keen.

For best executed work in Jacquard Design, 2d year, awarded to Percy Taylor Phillips.

For General Excellence, entire course, the New England Cotton Manufacturers' prize, awarded to James Voorhees Pomeroy. Honorable mentions to Ellsworth Moore and John Paul Jones.

For results in Final Examinations and Term Work in Chemistry, the "Dyers' Trade Journal" prize, awarded to Frederick Otto Zenke.

Prize scholarships for school year 1901-1902, awarded to Frederick Otto Zenke and Stephen H. Garner; Wm. H. Thorpe, evening class. Honorable mention to William H. Stafford, William H. Smith, John Kellars, Jr.

After the exercises a reception and garden party were held at the school, and the guests were given an opportunity of inspecting the practical work done by the pupils; which attained this year a higher standard of excellence than ever before. The fundamental principle of the Philadelphia Textile School is not only to impart technical knowledge to the students, but more than that to give them the trained instinct which will enable them to apply their theoretical knowledge to practical problems which will come up later in actual mill work. The success along these lines has been very marked, and they are turning out each year a body of trained young men who are finding responsible positions in our leading mills.

Foreign Trade.

The New Process Raw Hide Co., Syracuse, N. Y., reports the export sales of its New Process Pinions as rapidly increasing. The company has recently shipped 100 electric railway pinions for G. E. 800 motors to London on an order from an electrical supply house in that city. The pinions are to be used on one of the big railways recently built there. A shipment of pinions has also been made to the Albion Motor Co., an English automobile company. In the general machinery line the company has just shipped a number of big bevel gears, both iron and raw hide, some of the latter as large as 32 inches in diameter, to one of the leading English ship building concerns. A number of railway pinions have been shipped to Germany and Norway and reports from those countries say that the demand for them is increasing. Several inquiries have lately been received from Japan. A good sized order is in process of construction for one of the mines at Kalgourlie, Australia.

Clemson Agricultural and Mechanical College.

The annual commencement exercises of this college were held in Memorial Hall, Clemson College, S. C., from the 21st to the 23d of June. Following is a programme of the exercises:

Friday, June 21.

Eleven, A. M., Address to Graduating Class, Senator B. R. Tillman; 8.30 P. M., Alumni Address, H. B. Dodd.

Saturday, June 22.

Eleven, A. M., Commencement Exercises and Delivery of Diplomas; 8.30 P. M., Glee Club Entertainment.

Sunday, June 23.

Eleven A. M., Baccalaureate Sermon, Rev. D. N. McLauchlin; 8.30 P. M., Farewell Exercises, Y. M. C. A.

Following is a list of the graduates in the textile course, which is a prominent feature of this institution:

J. W. Anderson, Chester County; H. L. Cannon, Darlington County; W. R. Darlington, Barnwell County; J. C. Duckworth, Anderson County; W. N. Fair, Edgefield County; E. H. Pickett, Oconee County; H. L. Ramsey, Spartansburg County; W. A. Sanders, Chester County; W. H. Scott, Edgefield County.

Automatic Ribbed Underwear Machines.

The automatic knitting and ribbed underwear machines sold by James Taylor, 835 Arch St., Philadelphia, are giving great satisfaction in numerous mills in which they are now installed. The machine is adapted for the manufacture of under-shirts, drawers, tights, combination suits, sweaters, jackets and caps.

The construction is very substantial throughout. The cylinders and dials are forged from the steel ingot without welding, and the cams are made of best cast steel, tempered and ground. The dial may be set in any combination in order to produce fancy stitches. The dial lugs

are adjusted from the outside without interfering with the fabric, and have a roller contact which does not soil the cloth. The yarn carriers are adjustable in three directions, are of an improved shape and hardened. All parts of the machine are made interchangeable, and purchasers have the choice of either the cloth roller or galvanized basket for holding the knit fabric.

Mr. Taylor also carries a very large line of second hand machinery, which he invites manufacturers who are in want of textile machinery to inspect before purchasing elsewhere. His stock comprises underwear and hosiery machines, ribbers, sleevers, flat knitting machines, loopers, winders, nappers, brushes, presses, dryers, hydro extractors and many other miscellaneous machines and supplies.

—The American Blower Co. of Detroit, Mich., recently closed a contract for the entire heating, ventilating, drying and mechanical draft plants for the new works of the New York Glucose Co., now being erected at Shady Side, N. J., opposite West 96th St., New York City. There are fourteen distinct heating plants and five starch drying plants. The heating apparatus contains a total of about 100,000 feet of surface, fifteen steel plate fans, varying in size from 80 to 140 inches and five large disc fans. There is also a 360-inch steel plate fan for the forced draft plant. At present fourteen boilers are being installed, but eventually there will be eighteen, aggregating 9500 horse power output in steaming capacity. This fan is to provide the blast necessary for the proper combustion of the fuel, which will amount to nearly 50,000 pounds of anthracite "buckwheat" coal per hour. Altogether this is probably one of the largest single orders ever booked by any blower manufacturer.

Cigars.

If you want to get your cigars from a reliable firm, write to Taylor & Stinson, whose office and salesroom is 482 Bourse Building, Philadelphia, for their complete price list of Imported, Key West and Domestic cigars. They sell to the consumer only, and only by the box, and deliver to any part of the United States. Charges prepaid, with the privilege of returning if not satisfactory in every particular.

They have a very large box trade. Their customers range from Texas to Maine, and all through the Western States, and a large part of their business is done by mail; whatever they send you is as good as you can get for the money. Their own make of cigars are all Cuban hand-made, and made especially for the consumer, consequently, going direct from maker to smoker with but one profit. At their factory, No. 845 Jackson Street, only skilled workmen are employed, thus turning out only first class goods. In addition to their own brands, their price list contains all the leading brands of Imported and Key West cigars, and smokers should not miss sending for their new price list, just out.

Bleaching Cotton and Linen.

A process of bleaching has been patented in this country by parties residing in England. It relates, according to the patented description, to the bleaching of vegetable textile materials, chiefly those made of cotton and flax, and to those steps of the entire bleaching process in which the materials are treated with alkaline reagents at more or less elevated temperature.

The immediate object of the present invention is to provide means for safely carrying out a drastic alkaline treatment under the condition of reducing to a minimum the proportion of alkaline lye to the material treated.

In ordinary boiling in vomiting-keirs the proportion of liquor to goods is from seven to ten to one. In keirs with forced circulation it has been possible to reduce this to about one-half the above proportion. In this method the proportion is so far reduced that the process becomes one of steaming in contact with the active solution, rather than boiling, and the circulation of the solution is consequently dispensed with.

There are associated with the more active alkali, such as caustic soda, other reagents having specific effects (a) upon the physical properties of the active solution and (b) upon the constituents of the fibres which it is required to attack and remove; thus for treating linen-webs an aqueous solution of one to two per cent. caustic soda is prepared to which is added silicate of soda to increase its viscosity and a mineral or other suitable oil emulsified with a soda or potash-soap solution; the proportion of the ingredients of the mixture may be varied. The following mixture is recommended for linen-webs: 1.75 pounds soap, 14.0 pounds silicate, 1.5 pounds caustic soda, 1.75 pounds oil, and ten gallons water.

For treating flax goods of open texture, such as cambrics or damasks, the water is increased to fifteen gallons, retaining the above proportions of the other ingredients. This mixture at 30° to 40° centigrade is of a gelatinous character, so that it does not run to form uneven patches. It is placed in the box of a starch-mangle and the webs of linen are run through it at their full width, and after passing through the squeezing-rollers are run into a roll or batch. Cotton piece-goods are similarly treated.

On the outside of the roll a few folds of fabric, saturated with the solution should be wound to form a protective covering and prevent unequal action on the fabric. In the roll or batch the goods are exposed to the action of "dry" steam at pressure not exceeding four pounds per square inch for one to two hours. By this treatment the non-cellulose constituents are powerfully attacked.

The goods are afterward subjected to an ordinary open boil to clear away the constituents thus attacked. This boiling may be effected in apparatus of the kind described in the specification Serial No. 728,783, in which case the steaming may be effected in the same apparatus before the boiling. This operation may be carried out in many cases upon the brown or gray goods. In other cases it is necessary to prepare them by a preliminary lime-boil or other scouring process.

A New Automatic Folding and Cutting Machine.

J. C. Goodwin, Second and Diamond Sts., Philadelphia, is bringing out a new machine of this character, especially adapted for the wants of underwear manufacturers, for which many features of advantage are claimed as well as thorough construction and reasonable price. Pending its illustration in next issue of Textile World, full information may be obtained from Mr. Goodwin.

New Bedford Textile School.

The recent annual exhibition of this school was unusually large. It consisted of the work of students of this school, which has closed for the summer vacation. The exhibit consisted of products from the different machines, specimen designs and analyses of fabrics, note and pattern books, etc. The specimens of leno weaving received high praise and the display reflected great credit on the managers and instructors of this institution.

The following is a list of this year's graduates:—

DAY CLASSES—DIPLOMA COURSES.

General cotton manufacturing course—Arthur Roy Dickinson, Thomas Thompson Gifford, Nelson Allen Wood.

Yarn mill superintendent's course—Milo Louis Moss.

Weave mill superintendent's course—Charles Edward Buckley, Lester Evans Hawes.

Certificate Courses.

Thomas Julius McNeely, Guyton Palmer Stubbs, Richard Riding.

Montfort Combers.

Messrs. Schwartz & McKerrow, 31 State St., Boston, Mass., the American agents for Montfort combers, report that one of the largest New Bedford mills has recently placed an order for a full set of these machines. The Grosvenordale Co., of North Grosvenordale, Conn., have also placed an order for an equipment of Montfort combers.

—The Tecumseh Mills, Fall River, Mass., have just placed a repeat order with H. G. McKerrow for card room machinery of Tweedales & Smalley make.

—New Bedford Textile School 1901-1902 catalogue. We have received a copy of this publication, which describes the various courses, conditions of admission, tuition fees, etc., of this textile school. It contains numerous illustrations of the interior of the buildings, showing the rooms and machinery with students at work.

—The firm of Erben, Harding & Co. has been dissolved by mutual consent; the business has been taken over, and will now be carried on by The Erben, Harding Co., a corporation organized under the laws of Pennsylvania, with Walter Erben as president, C. H. Harding vice-president and treasurer, and John W. Levering has been appointed selling agent.

Sprinkler Litigation.

We are asked to publish the following communication:

The International Sprinkler Company to Purchasers and Users of Automatic Fire Extinguishing Apparatus.

Philadelphia, June 6, 1901.

The General Fire Extinguisher Company, of Providence, Rhode Island, has, for more than a year past, threatened the International Sprinkler Company, of Philadelphia, Pennsylvania, and its customers, with suit for alleged infringement of Letters Patent No. 372,220, dated October 25, 1887, to F. Grinnell, and Letters Patent No. 415,166, dated November 12, 1889, to J. R. Freeman, R. W. Newton, No. 514,163, dated February 6, 1894.

The International Sprinkler Company begs to advise purchasers and users of its automatic fire extinguishing apparatus that it has caused to be made a complete and exhaustive examination as to the validity of the patents named, and as to their alleged infringement by the International Sprinkler Company's apparatus, and has been led to the undoubted conclusion that the claims of said Letters Patent alleged to be infringed by the International Sprinkler Company's apparatus are invalid and void, because they do not cover anything that was patentably novel at the dates at which said respective patents were issued, and to further conclusion that no valid rights under said Letters Patent have been infringed by apparatus made and sold by the International Sprinkler Co.

The International Sprinkler Company advised the General Fire Extinguisher Company of this conclusion more than a year ago, and the said last named Company failed until within a few days past to bring any suit against the International Sprinkler Company for said alleged infringement. Said suits have just been begun and they will be defended by the International Sprinkler Company.

The International Sprinkler Company desires to inform purchasers and users of its fire extinguishers that should any suit or suits be begun against them for alleged infringement of said apparatus upon the patents above named it will, at its own expense, defend said suit or suits and hold the purchasers and users of its apparatus harmless from any recovery of profits, royalties, damages, or costs, incident thereto.

International Sprinkler Company,
Clarke Merchant, President.

—Oneida Cotton Mills, Graham, N. C., have ordered another lot of Spinning Frames. These machines will be exact duplicates of those recently installed by the Howard & Bullough American Machine Co., Pawtucket, R. I.

—The Coronet Worsted Mills at Mapleville, R. I., are building a modern, up-to-date plant, economy being carefully considered in the steam account, as well as in the manufacturing process of the goods.

—The Burt Mfg. Co. of Akron, Ohio, have recently equipped the San Juan Light & Transit Co., Porto Rico, with Cross Oil Filters.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. The Woodstock Cotton Mills, now equipping the plant with machinery, expect to begin operations in a few weeks. This company will make hosiery yarns, 15s, 18s, 20s and 22s principally.

—*Alabama, Huntsville. Further information learned regarding the new cotton weaving mill to be established and in which Charles L. Poor of New York, is interested, is that it will be known as The Eastern Manufacturing Company. Arthur H. Lowe and Geo. P. Grant, of Fitchburg, Mass., and the Lowe Mfg. Co., Huntsville, are also interested in this mill.

—*Georgia, Columbus. Work has beeen started on construction of the new mill for the Bibb Manufacturing Co. This plant will have an equipment of about 25,000 spindles for making 80s to 120s yarns, twines and cotton thread for shoe strings.

—*Georgia, Gainesville. Work is progressing rapidly on construction of the cotton mill established here by J. H. Montgomery and others, formerly with the Vesta Cotton Mills, to be removed here. The building will be 400 by 100 feet, four stories, of which three have already been erected. They will make cotton sheetings, shirtings and drills.

—*Mississippi, Laurel. It is reported that at a meeting recently held by the board of directors of the Laurel Cotton Mills, it was determined to double the plant of 10,000 spindles and 600 looms.

—*Mississippi, Yazoo City. Contract has been let for the erection of the Yazoo Cotton Mills and work will now proceed.

—*New York, Newburgh. Machinery is being received from abroad for installation in the mill to be established here by Geo. E. Lackey, formerly at Philadelphia, where he was connected with John Bromley & Sons. Curtains, canopies and other lace decorations will be made.

—*North Carolina, Charlotte. Work is progressing rapidly on construction of buildings for the Chadwick and Elizabeth Mills, the brick work being nearly completed on the Chadwick plant.

—*North Carolina, Lincolnton. J. M. Roberts, who is secretary and treasurer of the John Rudisill Manufacturing Co., and whose present address is Shelby, N. C., advises us that work will be begun at once on the erection of mill, which will be equipped with 1500 spindles. The location is near Lincolnton. They will manufacture yarns and warps, 22's to 30's. The capital will be increased to not over $75,000. The mill will be run by water power. A cement rock dam will be built. No contracts for machinery have yet been given out, and probably will not be for 60 or 90 days.

—Ohio, Youngstown. The American Belting Company has been incorporated with capital stock of $50,000 by J. Edwin Davis, J. F. McClurg, G. F. Arrel, John E. McVey and John F. Harrington. The company proposes manufacturing cotton belting and contemplates having plant ready to start August 1st.

—*South Carolina, Hartsville. Work is progressing rapidly on erection of the Hartsville Cotton Mills, three or four stories having been completed.

—*South Carolina, Newberry. The Mollohon Manufacturing Company is name of the new plant previously reported to be established here and in which E B. Wilbur, Geo. A. Summer, Dr. O. B Mayer and others are interested. Company is capitalized at $200,000 and proposes manufacturing fine cotton goods not now made in the South. If present plans are carried out, work will be started on foundations the last of July.

—*Texas, Belton. The Belton Cotton Mills, which have been having difficulty in receiving their machinery, are now busy setting it up.

—*Texas, Celeste. Work has been started on construction of the main building of the Celeste Cotton Mills.

—*Texas, Houston Heights. The plant of the Oriental Textile Mills is almost ready to start up. A large part of the machinery was received a few days ago and work is being pushed on installing same.

—Virginia, Cameron. The Cameron Cotton Mills Company has been incorporated with capital stock of $50,000 with W. G. Robertson, of Coleridge, N. C., as secretary and treasurer; John W. Scott, president and D. E. McIver, of Sanford, N. C., vice-president.

—*Virginia, Carrico. The Washington Cotton Mills, reported incorporated May 31st., at Trenton, N. J., with capital stock of $2,225,000, will be erected at this place. Col. F. H. Fries is president and W. C. Ruffin, secretary and treasurer. They propose having mill equipped with 40,000 spindles and 1,100 looms.

—Virginia, Portsmouth. The Leroy Manufacturing Company, incorporated with capital stock of $50,000, has been formed for purpose of manufacturing yarn and cloth, afterwards making into garments and also dyeing and bleaching. Geo. W. Simpson (Berkley) is president; T. H. Synon (Berkley) vice-president, and G. R. Leroy (South Norfolk), secretary and general manager.

Enlargements and Improvements.

—*Alabama, Birmingham. The Avondale Mills, which have started work on erection of the additional buildings, will install about 7000 spindles, when completed.

—Connecticut, Bridgeport. The Connecticut Web Company will erect a new building, 25 by 50 feet, 2 stories, of heavy mill construction for weaving purposes, and also make other improvements to the plant.

—*Connecticut, Danielson. Stafford dobbie heads with automatic towel and handkerchief attachment are being put on the looms at the Danielsonville Cotton Mill recently acquired by the Cochrane Mfg. Co.

—Connecticut, Taftville. A new building, about 200 by 120 feet, two stories high, will be built by the Ponemah Mills, ostensibly for a cloth room, but large enough for other purposes should it be found convenient in the future.

—Georgia, High Shoals. It is reported that some additional machinery, including twenty looms, will be installed in the High Shoals Manufacturing Co.'s mill.

—Georgia, Jefferson. The Jefferson Cotton Mills have decided to increase the capital stock from $65,000 to $100,000.

—Massachusetts, Fall River. The Mechanics Mills will replace some old machinery with new, which has already been received.

—Massachusetts, Fall River. An addition is being built to the dye house of the Kerr Thread Mill. They are also putting in new flooring in other parts of the mill.

—Massachusetts, Worcester. The Wachusett Mills Corporation has completed installation of a finishing plant in the mill.

—*Mississippi, Laurel. The Laurel Cotton Mills, which we previously reported to double present capacity of the mill (5000 spindles and 350 looms) inform us that the machinery has all been ordered, but that they are in the market for sundry supplies.

—*New York, Oswego. It is reported that an enlargement will be made to the plant of the Standard Yarn Company, in which Geo. B. Leonard, of Syracuse, has secured an interest.

—Pennsylvania, Philadelphia. A two-story brick dye house, 93 by 116 feet, is being erected corner Palethorp Street and Glenwood Avenue, for the Patterson Mfg. Co.

—*Rhode Island, Lonsdale. The machinery consisting of about 800 Northrop looms, is being placed in the addition recently completed for the Ann & Hope Mill.

—Rhode Island, Pawtucket. The Union Wadding Company will erect a new building, 44 by 38 feet, two stories, with one ell 40 by 25 feet and another 14 by 35 feet, one story each. The building, which is estimated to cost about $40,000, will be for offices.

—*Rhode Island, Warren. The Warren Manufacturing Co. reported in a previous issue to make enlargements and additions to the plant, will add about 18,000 spinning spindles, combers, etc. (Hetherington's.)

—*South Carolina, Bennettsville. The Bennettsville Manufacturing Co., previously reported to consider project of increasing the capital stock by $50,000, has applied for charter increasing from $200,000 to $250,000.

—South Carolina, Union. At a meeting held recently by the stockholders, it was voted to increase the capital stock from $200,000 to $550,000, for purpose of purchasing machinery for present plant and to make future additions, etc.

—South Carolina, Walterboro. At a meeting of the stockholders of the Colleton Cotton Mills, held recently, it was voted to raise funds sufficient to double the capacity of the mill, at present 5000 spindles and 136 looms.

—*South Carolina, Winnsboro. Work has been completed on installing the machinery in the new addition for the Fairfield Cotton Mills. It was recently decided to increase the capital stock of the plant, which now has about 10,000 spindles, to $250,000.

Mills Starting Up.

—*Georgia, Tennille. Satisfactory arrangements have been made with the creditors of the Tennille Cotton Mills and the plant will soon be put in operation.

—*Indiana, Evansville. The Evansville Cotton Mills have resumed operations on full time. This mill has been operating but three days a week of late.

—*Maine, Biddeford. The Pepperell mills, which have been operated but four days a week, have started on the sixty-hour summer schedule.

—*Massachusetts, Taunton. It is now reported that the Cohannet Mills, which have been idle for some time, are about to resume operations.

—*North Carolina, Lexington. The Nokomis Cotton Mills have been entirely completed and production begun. Plain gray goods are made.

—*Tennessee, Humboldt. The Humboldt Cotton Mills started manufacturing cloth on June 24th. In addition to officers previously mentioned, is T. H. Lever, holding position of superintendent.

Mills Shutting Down.

—Kentucky, Maysville. The cotton mills, operated by January & Wood Co., will shut down July 3d for a few weeks, during which time general repairs will be made to the machinery.

—Massachusetts, Methuen. The Methuen Co.'s mill has been shut down for an indefinite time.

—*Nebraska, Kearney. The owners of the Kearney Cotton Mills have decided to close the plant.

—*North Carolina, Charlotte. The Ada Manufacturing Company, reported as having discontinued operations, will resume as soon as the yarn market warrants their so doing.

—North Carolina, Kernersville. It is reported that the Southern Woolen Mills are making preparations for starting up the plant.

—North Carolina, Salisbury. The Vance Cotton Mill has been shut down for an indefinite time owing to question regarding labor unions.

—*Virginia, Ettricks. The Pocahontas Cotton Mills have been shut down as per report in issue of May 24th.

Woolen.

New Mills.

—*Connecticut, Central Village. Work has been started on erection of the new building which will be 70 by 200 feet, 4 stories high, for the Plainfield Woolen Company. The Central Brick Mill has been taken down as far as foundation.

—*Connecticut, Thompsonville. Work will now be started on erection of new buildings for the Hartford Carpet Co. Some delay was due to inability to secure the lumber, and in getting castings, bolts, etc., for the building.

—*Kansas, Topeka. The Western Woolen Mill Company is name adopted for the new plant to be established here. Company has capital stock of $60,000, with M. C. Holman, president; J. B. Billard, vice-president; F. L. Moore, secretary and treasurer and J. F. McAfee, general manager. The main building of the plant will be 45 by 100 feet, two stories, for carding, spinning, weaving, etc. Another building, 35 by 50 feet, one story high, will be erected for wool washing, finishing, etc. They will build a building 25 by 60 feet, two stories, of which the upper story will be utilized for manufacturing purposes and the lower for a warehouse, and one two stories as warehouse and a picker room. They will manufacture pants from their cloth, and contemplate finishing about twenty dozen pairs per day. Work will be started on buildings at an early date.

—*Massachusetts, Pittsfield. The Argyle Woolen Co. is name taken by James Graham, Alex Mitchell and Davis McArthur to operate the Pomeroy Woolen Mill. They will make cheviots and cassimeres, starting about August 1st, with 8 sets cards and 32 looms.

—*Montana, Big Timber. The machinery of Wm. Whitfield & Sons' mill at Lanark, Ill., has nearly all been removed to the new plant at this place and they expect to have mill running in about three weeks. Plant is operated under name of the Sweet Grass Woolen Mill; Wm. Whitfield, president; E. O. Clark, vice-president; John F. Asbury, treasurer and Henry Nicholson, secretary. They will manufacture blankets and flannels.

—New York, Moffittsville. A small carding mill has been started up at this place by R. L. Main.

—New York, Oswego. At a recent meeting of the Mohawk Manufacturing Company, manufacturing cotton shoddy, it was decided to establish a plant for making woolen shoddy. The new branch will be carried on in the building formerly occupied by the Anchor Silver Plate Co., purchased several months ago. Contract will be awarded in a few days for making repairs and putting the plant in order. At a subsequent meeting of the stockholders, H. D. Diment was elected president; C. A. Tanner, secretary and E. B. Mott, treasurer.

—*New York, Staten Island, Stapleton. H. A. Sanders, with office at 47 Leonard Street, New York, will start operations about July 1st, in new mill under construction at this place. The mill will be equipped with two sets woolen cards, making cotton and woolen goods. A dye house will also be attached to the mill.

—*Oregon, Portland. The Portland Woolen Mills, which were incorporated with $50,000 capital stock, and W. P. Olds, president, E. L. Thompson, treasurer, and Chas. Carter, superintendent, will start operations October 1st, making white blankets and fancy woolens. The mill is to be equipped with 32 looms. A plant has been purchased, but only a part of the machinery will be used, as new machines will be added and other additional improvements made.

—*Pennsylvania, Chester. James Emmett is president; Robert E. Ross, vice-president and C. Y. James, secretary and treasurer of the Emmott Chester Worsted Spinning Co., which will soon start up the plant. The machinery has been partly installed and the remainder will be put in position so that operations can be started up in a few weeks.

—Rhode Island, Pawtucket. A. L. Bowes, formerly with the Lawrence Felting Co., at Millville, Mass., is interested in organizing a company with capital stock of $50,000, to manufacture felts. Col. L. B. Goff is interested in the enterprise.

—*Vermont, Ludlow. Work has been started on the new buildings for the Verd Mont Mills. Most of the machinery equipment has been purchased.

—*Virginia, Basic City. The brick building to be ocupied by the Shenandoah Woolen Company has been completed and part of the machinery installed. Operations will be started up shortly.

Enlargements and Improvements.

—*Kentucky, Louisville. The Falls City Jeans & Woolen Company inform us that report concerning manufacture of cassimeres is correct, but that the only new addition to be built will be for wet finishing department. They have taken 136 narrow looms out of the old plant, leaving 204 narrow ones and installed 41 broad looms for the new purpose.

—*Kentucky, Mayfield. The capital stock of the Mayfield Woolen Mills has been increased to $1,250,000. The plant located at this place will be removed to St. Louis, where a new mill was established a short time ago.

—Maine, East Madison. The Marston Woolen Company, Skowegan, Me., has leased the Lakeside Worsted Mill until August 1st. The concern is also negotiating for an additional plant of 50 looms in Massachusetts.

—Maine, Fairfield. The American Woolen Co. has let the contract for erection of large dye and boiler house for the Kennebec Mills, to H. Purington & Co., of Waterville. The new building will be one story high, with basement. Two large boilers and ten dye vats will be installed.

—*Maine, No. Monmouth. The Annabessacook Mills, of which John H. McIlroy is general manager, inform us that they will use J. R. King's mill, recently purchased, as an auxiliary to their present plant, not installing new machinery at present.

—Maine, Sangerville. An addition, 45 by 12 feet, to be utilized for spooling and dressing, is under construction for the Carlton Woolen Mill. They will also install two new sets of machinery. A 75-foot tower is also being built.

—Massachusetts, Dodge. An addition will be built to the satinet mill operated by C. W. Pike.

—Massachusetts, East Douglass. The wet finishing room of W. E. Hayward & Co.'s mill is running until 9 o'clock nights. They have recently added ten more looms to the equipment, giving the mill a total of 126.

—*Massachusetts, Holyoke. Work has been started on excavations for the additions and improvements to be made to the Farr Alpaca Company's plant.

—*Massachusetts, Maynard. The American Woolen Company has let contract to R. L. Fosburgh & Co., Pittsfield, for the erection of a new mill, 690 by 106 feet, six stories high.

—Massachusetts, Ware. New machinery is being installed in the Geo. H. Gilbert Manufacturing Co.'s mill at Gilbertville.

—*New Jersey, Camden. The Fries-Breslin Company has purchased the plant of the Colonial Rug & Textile Company, started during the past year. The plant will continue in operation until about July 1st, when they expect to have their new addition completed and will remove machinery from this mill into same.

—New Jersey, Lodi. The Herman Bonitz Company has recently completed addition of a new wet process plant for carbonizing, and are now installing a large double dyer. The company manufactures shoddies on an extensive scale.

—New Jersey, Passaic. An addition, 140 by 40 feet, will be built to the Gera Mills, manufacturers of woolens.

—New Jersey, Stanwick. The machinery of the Stanwick Carpet Mills has been purchased by Alexander Crowe, Jr., proprietor of the Caledonia Carpet Mills, Philadelphia, Pa., at public sale, for $7200, and will be removed to that place. Mill has an equipment of about 76 looms. The buildings were recently purchased by Rogers Terra Cotta Company, which occupies same.

—Ohio, Tiffin. Balbian Bros. contemplate making an extensive enlargement to the plant during the year. They propose building an addition to be fitted up for making overalls.

—*Pennsylvania, Philadelphia. A new building, 48 by 96 feet, 2 stories high, will be erected by the John B. Stetson Co. for an electric power house at a cost of about $30,000, in addition to large mill under way

—*Pennsylvania, Reynoldsville. Work has been started on construction of the addition for the Reynoldsville Woolen Mill Company.

—Rhode Island, Harrisville. Ground has been broken for the erection of a new building for Wm. Tinkham & Co. It is thought that the new addition will be utilized for weaving.

—Rhode Island, Manville. The Contrexville Manufacturing Co., making plushes and corduroys, have added six new looms to the plant.

—Tennessee, Chattanooga. The Extract Wool & Merino Company has made application to amend the charter in order to increase the capital stock from $5000 to $25,000.

—Tennessee, Cleveland. Six new looms have been installed in the Cleveland Woolen Mill, which is changing all the looms over to fancies.

—*Vermont, Saxton's River. An addition, two stories, is being built to the Saxton River Worsted Mill.

—West Virginia, Buckhannon. The plant of the Buckhannon Woolen Mill Co. will be enlarged and new machinery added. G. F. Stuckert has recently purchased a half interest in the firm.

Mills Starting Up.

—*Connecticut, Norwalk. The Norwalk & Fairfield Worsted Mills, recently closed by attachment, have again resumed operations.

—Colorado, Trinidad. The Forbes Wool Company has resumed operations in the scouring mill, after several weeks' shut down for repairs and alterations.

—*Massachusetts, Clinton. It is expected that the Sterling Worsted Co., whose plant has been shut down lately, will be started up at an early date.

Mills Shutting Down.

—Massachusetts, Spencer. The Spencer Textile Co.'s Mill has been shut down until a satisfactory arrangement of the firm's affairs can be made.

Knit.

New Mills

—*Alabama, Athens. The new knitting mill to be established here will start operations about September 15th, as the Lewiston Hosiery Mills, with capital stock of $15,000. J. W. Frost is president and Robert Hendricks, treasurer. They will make children's and misses' hose, 104 needle, operating 45 knitting machines; steam power will be used. Are in the market for various parts of the equipment.

—*Alabama, Piedmont. It is reported that nearly all the necessary stock for the proposed knitting mill has been subscribed, and that work will soon start on erection of buildings, etc.

—Delaware, Townsend. It is reported that a hosiery factory will be established at this place.

—*Florida, Jacksonville. The Jacksonville Knitting Co., whose plant was burned out, June 17th, with total loss, fully covered by insurance, informs us that they will erect a new building. Will install 25 new knitting machines, orders for which have been placed.

—Maryland, Brunswick. It is reported that a small knitting mill will be started up July 15th, by the Lewis Jones Knitting Company of Winchester, Va. This concern makes ribbed underwear and hosiery.

—*Mississippi, Columbus. Contract has been let for the election of the Columbus Hosiery Mills. The building will be 50 by 155 feet, with separate engine and boiler room, brick and is to be completed by September.

—New York, Utica. The Richelieu Knitting Mills have been incorporated with capital stock of $6500 by W. J. McQuade, J. Firsching and H. W. Neumeyer.

—*North Carolina, Shelby. Operations have been started in the hosiery mill established here by J. F. Williams. The mill is equipped with fifteen knitting machines, five double feed ribbers and three loopers. Plant has capacity of about 75 dozen hose per day.

—Pennsylvania, Birdsboro. A small hosiery mill has been established here by Calvin Smith and Wm. Ross, who have remodelled the idle shoe factory at this place for the aforesaid purpose. They will make stockings of the finer grade, in plain and colors.

—Pennsylvania, Norristown. A new hosiery factory will be started here by George W. Kite and Douglass J. Stewart.

—Pennsylvania, Reading. Albert Weber, formerly connected with A. Weber & Co., has withdrawn from that firm and purchased property at corner of 12th and Muhlenberg Streets and will erect a new mill for manufacturing coarse and fine grades of hosiery.

—*Virginia, Piedmont Heights. Work has been started on construction on the knitting mills to be established by the National Trust Company of Washington. This project was mentioned last November, when it was stated that they contemplated erecting plant in the spring.

Enlargements and Improvements.

—Georgia, Rossville. The Richmond Hosiery Mills have discontinued operations for a short time to allow for making repairs and improvements to the plant. New machinery will be added.

—*Georgia, Tifton. The Tifton Knitting Mills have completed installation of the additional knitting machines and will soon have the full equipment of the mill running. The apparatus for the dyeing plant has been received and will be set up in a short while.

—Indiana, Fort Wayne. The Wayne Knitting Mills have increased the capital stock from $250,000 to $350,000.

—Massachusetts, Worcester. A new dye house has been completed for the Aetna Knitting Company, manufacturing men's woolen hosiery. They have also installed twenty-five additional machines, a new set of cards and a mule.

—*Michigan, Three Rivers. An addition, 24x50 feet, will be built to the Quincy Knitting Co.'s mill, for boiler and dye house.

—New York, Cohoes. Work has beeen started on an addition, 75 by 40 feet, three stories high, to No. 4 mill of the Victor Knitting Mills Company. New machinery will be installed in the building, which will be used for manufacturing purposes.

—New York, Greenwich. Work has been started on an enlargement to the Van Zile Knitting Co.'s plant.

—New York, Utica. The Schuyler Knitting Company will occupy the new factory building which will be erected by Charles Poole. The building will be 70 by 50 feet, five stories and basement. It is expected that the mill will be ready for occupancy about Sept. 1st.

—*North Carolina, Newton. The Newton Hosiery Mills, D. J. Carpenter, proprietor, have completed installation of a dye plant, capacity 1500 lbs. goods per day. The addition to building is with view of installing additional machinery at an early date, or as soon as it can be conveniently done.

—New York, Oneonta. The Gloversville Knitting Company, of Gloversville, is to make extensions to the branch mill here.

—North Carolina, Newton. An addition 20 by 30 feet is being built to the Newton Hosiery Mill. A new dye house is also under construction.

—North Carolina, Oxford. The Oxford Knitting Mills have decided to install a bleaching plant in the mill and have placed contract for necessary equipment. Company manufactures men's and women's ribbed underwear.

—Pennsylvania, Mohrsville. An enlargement has been made and new machinery added to Fraunfelter and Wagner's underwear mill.

—Pennsylvania, Philadelphia. The National Knitting Works, R. Gutsche, proprietor, located at present at 304-308 Master Street, have purchased the mill property at s. w. corner Jefferson and Randolph streets. The building is 87 by 125 feet, three stories. Machinery in the old plant will soon be removed to the new location.

—Pennsylvania, Shoemakersville. Wagner & Heckman, manufacturers of hosiery, have added three new automatic machines to the plant and placed an order for fifteen more.

—South Carolina, Manning. W. Scott Harvin is installing the Dubois system of fast black dyeing in his knitting mill.

—Tennessee, Knoxville. The Knoxville Knitting Mills have recently added 30 new machines to their equipment.

—*Vermont, Brattleboro. Charles Miner's hosiery factory, recently destroyed by fire will be rebuilt on a larger scale.

—Virginia, Petersburg. The Petersburg Hosiery Co., A. S. Reinach & Son, proprietors, has let contract for erection of new building, 100 by 40 feet, 2 stories.

Mills Starting Up.

—*Georgia, Atlanta. Operations have recently begun in the Atlanta Knitting Mills, making ladies' underwear.

—*New York, Stockport. Operations have beeen resumed in the Rossman Knitting Company's plant, which has been shut down for the past month.

—*Virginia, Portsmouth. Operations have been started up in a small way in Joseph A. Parker's hosiery mill.

Mills Shutting Down.

—Georgia, Griffin. The Griffin Knitting Mills have been shut down temporarily. Mr. Booth, the superintendent, is now in the Wahneta Mills, at Cedartown.

Silk.

New Mills.

—*New Jersey, Paterson. The looms removed to the Barnert Mill by F. H. Mayhew, formerly at Wortendyke, who also has a mill at Altoona, Pa., will be operated under name of "The Mayhew Silk Co."

—*New York, Hornellsville. The Liberty Silk Co., whose main mill is at New York, now has sixty looms ready for operation.

—*New York, Kenwood. The new mill for the Oneida Community is nearly completed and company contemplates starting operations in same about August.

—*North Carolina, Roanoke Rapids. The Rosemary Manufacturing Co. has completed erection of the large mill, which will be put in operation at an early date. The main building is 104 by 332 feet, two and three stories high, arranged for 12,000 spindles and 400 looms, although but half this number will be put in at outset. The machinery will be operated by electric power. Fancy goods and damasks will be made.

—Pennsylvania, Newcastle. Work will be started at once on erection of a new mill for Miller, Ward & Co., of Paterson, N. J. Employment will be furnished for about 300 people, when completed.

—Pennsylvania, Slatington. A committee has been selected by the Board of Trade to secure a site for a new silk mill to be located there.

—*North Carolina, Elizabeth City. The Riverside Land Co. and P. H. Williams are said to be interested in organizing a company to erect a $50,000 silk mill, mentioned in one of the May issues.

—*Rhode Island, Darlington. Work has been completed on construction of buildings for the Royal Weaving Company's new mill. They are now installing the machinery, some of which has been started up. When the complete equipment is placed, the mill will have 480 silk and velvet looms. It is expected that the mill will be running in full about September 1st.

—*Rhode Island, Valley Falls. Ground will be broken shortly for erection of the large silk mill which David, Reiling & Schoen will establish at this place, plans and specifications having been completed. Andrew J. Currier, recently connected with the Samoset Company, operating the Albion Co.'s Mills, is largely interested in the enterprise, which we understand has assumed name of the Naushon Company.

Enlargements and Improvements.

—New Jersey, Phillipsburg. An addition is being built to the Standard Silk Co.'s mill.

—Pennsylvania, East Mauch Chunk. Ten new looms are being placed in the Ernest Silk Mill, manufacturing ribbons and broad silks.

—Pennsylvania, Newberry. About sixty additional looms are being added to the Holmes Silk Co.'s branch mill at this place. This machinery is being removed from one of the company's annexes at Paterson, where the main plant is located.

—Pennsylvania, Quakertown. Ten new looms are to be installed on the first floor of the Quakertown Silk Mill. This floor was previously occupied by the soft silk winding machines, which have been moved to the second floor.

—*Pennsylvania, York. Twenty additional looms are being installed in the Monarch Silk Mill, which now has 80 in operation, making silks and satins.

Miscellaneous.

New Mills.

—*Kentucky, Covington. The Reliance Textile & Dye Works, whose plant was partially destroyed by fire in February, inform us that same has been rebuilt and they have begun operations with increased facilities in their piece goods and yarn department, also in the fast black plant.

—Massachusetts, New Bedford. The Mount Hope Finishing Company has been incorporated under laws of this state, with capital of $125,000 for purpose of dyeing, printing and finishing textile fabrics. Joseph Knowles is president; Joseph K. Milliken, treasurer and Thomas S. Halloway and W. W. Crapo, directors. They have purchased property at No. Dighton, which will be utilized.

—*Massachusetts, Taunton. Work is being pushed to completion on buildings for the Taunton Dye Works & Bleachery Co., replacing those destroyed by recent fire.

—New Jersey, Paterson. The Liberty Silk Dyeing Company has been incorporated with capital stock of $50,000, for purpose of dyeing silks and other fabrics. Plant will be located at corner Bond and Madison streets. Michael Doyle and Robert Stanley are interested.

—New York, Brooklyn. The Planet Mills Manufacturing Co. has purchased the property formerly occupied as a tobacco plant by Buchanan & Lyall. New machinery will be installed for making jute yarns, twines and other products.

—Pennsylvania, Philadelphia. An extensive addition will be built to Christopher Bailey's cordage mill at 818-820 Swanson Street.

—Pennsylvania, Philadelphia. Work will be started at once on alterations and additions to E. H. Fitler Company's cordage works, Bridesburg.

—Rhode Island, East Greenwich. Two new buildings, 150 by 75 feet and 50 by 35 feet, are under construction for the Greenwich Bleachery.

—*Rhode Island, Pawtucket. The addition to the Dempsey Bleachery & Dye Works, leased to the French Hair Cloth Company, will be put in operation about August 1st. The building will be 98x58 feet, one story and basement.

Enlargements and Improvements.

—Massachusetts, Ludlow. Contract has been let to Maguire & Penniman, of Providence, for erection of a new brick power house, 2 stories, 64x128 feet, for the Ludlow Manufacturing Co.

—Pennsylvania, Reading. A new building, 40 by 152 feet, two stories, brick, will be erected by Elias Schultz & Son, proprietors of the Liberty Dye Works.

Failures and Suspensions.

—Connecticut, Hartford. Lincoln & Co., builders of dyeing and bleaching machinery, recenty called a meeting of their creditors, which was held in Hartford, and a statement of assets and liabilities presented. A committee was appointed to consider the best action to be taken.

—Pennsylvania, Trainer. D. Trainer & Sons' Manufacturing Co. has suspended payment. A meeting of the creditors has been called and at which some action taken regarding situation. It is not known when operations will be resumed. The suspension is a surprise to the trade in general.

Facts and Gossip.

—Alabama, Birmingham. Louis B. Magid, formerly at Milford, Mass., has been at this place making investigations regarding advantages offered for locating a silk mill. Mr. Magid was last reported in correspondence with a California town.

—Alabama, Enterprise. A cotton mill is to be erected here by Messrs. Till's & O'Neal at a cost of about $125,000.

—Colorada, Denver. C. E. Wantland is interested in project on foot for establishment of a woolen mill at this place.

—Connecticut, Southington. J. Clayton Cowles is interested in organizing a company, with capital stock of $20,000, to erect a mill for manufacturing knit goods in Plantsville, and is now soliciting subscriptions to the stock. It is thought that a dye house will be built in connection with the plant.

—Georgia, Attalia. A project is on foot for establishing a knitting mill at this place.

—Georgia, Columbus. It is reported that the Bibb Manufacturing Company will erect another large mill opposite their present plant.

—Georgia, Winder. Dr. LeLaperriere has resigned as president of the Winder Cotton Mill, and J. B. Richards, of Atlanta, Ga., has been elected as his successor. W. M. McElroy was also elected secretary and treasurer.

—Kentucky, Hustonville. A company is being organized at this place to build and operate a small woolen mill.

—Louisiana, Alexandria. Efforts are being made by F. M. Welch, mayor of the city, to organize a company for purpose of establishing a cotton mill.

—*Maine, Freedom. Wm. Linn, Jr., informs us that he has purchased the Custom Carding Mill and water power at this place and will make improvements as needed.

—Massachusetts, Dalton. Thomas and John P. Crane have purchased the small towel mill formerly operated here by F. W. Adams, and are removing same to Dalton, where they will continue the business.

—Massachusetts, Monson. It is reported that Ferdinand Langwald, who purchased the Reynolds straw shop property, contemplated changing the plant for manufacturing woolens.

—Massachusetts, New Bedford. At a recent meeting of the directors of the Dartmouth Mfg. Corp., Samuel E. Bentley was elected agent and superintendent in place of Walter H. Langshaw.

—Massachusetts, Worcester. M. J. Whittall has purchased the entire business of the Worcester Carpet Co., and will operate the combined plants individually for the present, perhaps incorporating later.

—Michigan, Detroit. A two-story brick knitting mill will be erected at corner St. Aubin & Male Streets, by Thos. Scheich.

—Michigan, Owosso. It is reported that a large knitting mill will be established here provided the common council donate a new two-story brick building, 30 by 100 feet. It is thought likely that a favorable action will be taken in the matter.

—*Mississippi, Jackson. Over one-half of the capital stock, $125,000, for the proposed new cotton mill, has been subscribed.

—Missouri, Sedalia. J. Frost Waddell, secretary of the Sedalia Business Men's club is corresponding with a large linen manufacturing concern which has made propositions toward establishing a plant in this city for manufacturing linen fabrics from flax, straw, etc.

—*Missouri, St. Louis. The Mayfield Woolen Mills Clothing Company has been incorporated with capital stock of $1,200,000. This refers to the Mayfield Woolen Mills, recently removed here from Mayfield, Ky., and which will manufacture clothing in addition to woolens.

—New Hampshire, Laconia. It is reported that parties from Rhode Isand, interested in the linen industry, are organizing a company with capital of $150,000 to establish a large plant and have been investigating various cities for location and also seeking inducements. The Gilford Hosiery Mill, property of Hon. and Mrs. J. B. Holden has been looked over.

—New Hampshire, Wilton. At a meeting recently held by the directors of the Hillsborough Mills, it was decided to go into liquidation in order to settle affairs of the company which has not been operated profitably of late.

—*New Jersey, Paterson. A dividend of 50 per cent. will be paid by Jerome C. Reed, receiver, to the creditors of the Pioneer Silk Company.

—New Jersey, Paterson. After June 26th, the plant formerly operated by Murphy & Aronsohn will be carried on

by Mr. Aronsohn, Mr. Murphy retiring. It is stated that the plant is to be enlarged.

—New York, Amsterdam. The Gardiner & Warring Company has been incorporated with capital stock of $125,000 to operate the knitting mill formerly run by Gardiner & Warring.

—*New York, Binghamton. The Valentine & Bentley Silk Company, Newton, N. J., advises us that they do not contemplate establishing a plant at this place. They are, however, interested in additional machinery equipment and mention dyeing machinery, dye sticks, copper work for dye house, loom pickers, interior telephone system, finishing machinery, etc.

—New York, East Salem. The Eagleville Woolen Mills, formerly operated by C. P. Hatch, have been purchased by Glenwood & Clark. The new proprietors will operate the plant on a more extensive scale and will install additional machinery.

—*New York, Frankfort. The Frankfort Linen Mill, sold at mortgage foreclosure sale, was bid in by Henry Churchill, for $2500. It is rumored that a stock company will be formed and the plant put in operation.

—New York, Jamestown. A. Ashworth, formerly superintendent of the Hope Worsted Mills, Louisville, Ky., is in England investigating machinery for a plant projected here for manufacturing tops.

—New York, New York. The Crescent Company has been incorporated with capital stock of $50,000 to manufacture cotton and woolen goods. W. W. Beebe, C. F. Chapman, Jr., both of New York City and J. R. Fowler of Brooklyn are the incorporators.

—New York, Poughkeepsie. Woodhouse, Bopp & Co., New York City, large silk manufacturers, propose incorporating with capital stock of $500,000 and desiring to locate in some outside city, have made proposition to this town, i. e., to invest $75,000 in the enterprise.

—New York, Valatie. The Wild Knitting Company has been incorporated with capital stock of $150,000. Mary A. Wild, Charles Wild and William H. Wild are the directors.

—New York, Valatie. The Wild Cotton Manufacturing Company has been incorporated with capital stock of $50,000. The directors are: Charles Wild, William H. Wild and Nathan P. Wild.

—North Carolina, Henderson. A cotton mill for manufacturing cotton rope and cordage of different kinds is contemplated at this place by J. W. Halstead and associates. They are now receiving estimates on machinery equipment.

—North Carolina, Haw River. The cotton mills at this place, viz., the Cora Mfg. Co., Granite Mfg. Co. and Thos. M. Holt Mfg. Co., have been organized into one corporation, under name of the Holt-Granite Manufacturing Company.

—North Carolina, Mountain Island. Considerable damage was done to the Catawba Electric Power Company's mill, of which W. T. Jordan is manager, by floods, the machinery and walls of the dye house and walls of the warp room having been washed away.

—*Ohio, Piqua. The F. Gray Woolen Mill Company's mill, which has been in the hands of receivers, was sold at public auction to George W. Crouse, of Akron, for company in which he has interests, for $48,889.22. Operations have been resumed under new management.

—*Ohio, Roscoe. The old woolen mill property, which has been idle for some time, and recently sold at sheriff's sale, is being remodelled for company which will corrugate straw paper.

—*Pennsylvania, Bristol. The plant of the Way & Lowe Knitting Mills Co., recently put in hands of receiver, will be sold.

—Pennsylvania, Conshohocken. The entire plant, trade mark and patent of the John Parker Manufacturing Co., Philadelphia, making surgical hosiery and suspensory bandages, has been purchased by the J. Ellwood Lee Company. The machinery will be removed here.

—Pennsylvania, Doylestown. The Doylestown Worsted Mill has been leased for a period of three years by James Hutley and William Aveyard, who will operate the same under firm name of Aveyard & Co.

—*Pennsylvania, Hallstead. It is reported that operations will be resumed shortly at the Hallstead Textile Co.'s mill, now controlled by Spingarn Bros., of New York.

—*Pennsylvania, Palmerton. A. L. Clauser, previously mentioned as interested in establishing a silk mill at this place, writes that as Palmerton is a new town, the New Jersey Zinc Co. is offering large inducements for manufacturing enterprises which will employ female help to locate here.

—*Pennsylvania, Philadelphia. The Lincoln Worsted Mills, 21st and Naudain Sts., operated by Albert R. Elsasser, previous to his failure and subsequent death, have been sold at auction to O'Neill Bros., for $3950.

—*Rhode Island, Apponaug. The Oriental Print Works, recently sold under foreclosure, have been purchased by William W. Dunnell, who recently purchased the Allen Print Works, at Providence. It is stated that some improvements will be made to the plant and operations started in about 60 days.

—Pennsylvania, Chester. The Mohawk Mill, at this place, which has been idle for a number of years, is being torn down. A large business building will be erected on the site.

—*Rhode Island, Bristol. The Bristol Wool Company, whose plant was destroyed by fire recently, upon which there was an insurance of $3,750, has not yet decided as to rebuilding of plant, but in all probability they will not.

—Rhode Island, Westerly. It is reported that the Lorraine Manufacturing Company has purchased the mill property at the west end of Pawcatuck Bridge, from A. L. Chase and B. Court Bentley.

—*Rhode Island, Wyoming. The Silk mill of the Monopole Weaving Co., recently petitioned into bankruptcy, has started up sufficiently to run out the stock on hand, under direction of Russell, Murray & Co., of New York, with Mr. Wiley in charge.

PERSONAL RECORD.

Cotton.

—Frank L. Allen is the new overseer of weaving at the Thomaston Cotton Mill, Thomaston, Ga. Mr. Allen was formerly assistant overseer of weaving at the Indian Head Mills, Cordova, Ala.

—Willis N. Anthony, formerly with the Otis Company, is now boss weaver at the Cordis Mill, Millbury, Mass.

—C. G. V. Anthony is engineer at the Vivian Cotton Mills, Cherryville, N. C., having succeeded Peter Parker.

—Stephen N. Bourne, for many years agent of the Stark Mills, Manchester, N. H., has resigned. He will, however, be retained as consulting agent by the corporation. John H. Whitten, who for a number of years has been superintendent under Agent Bourne, has been appointed general manager. Mr. Whitten first went into the mill business in Biddeford, Me., where he worked one year in the Pepperell Manufacturing Co. He then went to the Stark Mill as secondhand, and has since served in different capacities, and has become thoroughly acquainted with all departments of the business.

—L. W. Buck of Greensboro, N. C., has accepted the position of superintendent of the Itasca Cotton Mills, Itasca, Tex.

—C. M. Beckwell, formerly of Spartanburg, S. C., has recently been secured as boss weaver by the Florence Cotton Mills, Forest City, N. C.

—W. C. Bennett has resigned as boss carder at the Fulton Bag & Cotton Mfg. Co., Atlanta, Ga., to return to his former position as boss carder at the Derby Cotton Mills, Shelton, Conn.

—Charles E. Buckley of New Bedford, Mass., who recently graduated from the textile school there, has become assistant designer at the Hargraves and Parker Mills, Fall River, Mass.

—W. W. Coe recently resigned as overseer of carding at the Berkshire Mills, Adams, Mass. He was presented with a tea service by the help under him as a token of their regard for him.

—Thomas Connors, for the past few years superintendent of the Metacomet Mfg. Co., Fall River, Mass., has resigned to accept a similar position with the Fall River Manufactory, in that city, succeeding W. A. Nichols.

—Mark B. Creed has been appointed superintendent of the Wamsutta Mills, Nos. 1, 2 and 3, New Bedford, Mass. Mr. Creed has been overseer of carding in these mills for a number of years, and has also held the position of evening instructor of the New Bedford Textile School since its inception.

—James Dunn has resigned his position with the Grant Yarn Mills, Fitchburg, Mass., and returned to Valley Falls, R. I.

—Samuel Dunn, who has for several years been assistant overseer of weaving at the Lanett Mills, West Point, Ga., has been made overseer of weaving at the Mammoth Spring Cotton Mills, Mammoth Spring, Ark.

—A. M. Davis has been appointed superintendent of the Lowe Cotton Mill, Huntsville, Ala.

—The many friends of E. W. France, director of the Philadelphia Textile School, will be glad to learn that at the earnest solicitation of the trustees and committee of the school, he has consented to take a well-earned vacation, and sailed the 1st of July with his family for Europe to be gone until the latter part of September, when the school will reopen. Mr. France has been indefatigable in his labors for the Philadelphia Textile School, and his "vacations" have been usually passed in the hardest sort of work in arranging for the new year, or else when away from Philadelphia, in working for the interests of the school. While in Europe, he will visit and investigate the methods of foreign schools, and this trip will be thus an enjoyable vacation for himself and valuable in his work.

—S. H. Fairchild, overseer of spinning at the Opelika Cotton Factory, Opelika, Ala., has been promoted to the superintendency of that plant.

—Thomas Googins is now night overseer of spinning for the Algonquin Co., Passaic, N. J.

—W. R. Harris succeeds S. B. Shipp as superintendent at the Elm Grove Cotton Mill at Lincolnton, N. C.

—E. N. Jones has resigned as superintendent of the Renfrew Manufacturing Co., Adams, Mass. Mr. Jones has been in the employ of the company for 26 years, during the last 19 of which he was superintendent of the mill. His resignation is much regretted.

—Joseph H. Jones, who has been master mechanic at the plant of the Lawton Spinning Co., Woonsocket, R. I., for some years, has resigned and gone to Augusta, Ga., where he has accepted a position with the Clearwater Bleachery. William F. Worrall, who has been master mechanic with the Hamlet Textile Co., of this city, for some time past, has succeeded Mr. Jones. The place left vacant by Mr. Worrall has been taken by William F. Muller, who has been assistant mechanic at the Hamlet plant.

—H. W. Kimball has recently been appointed superintendent of the Fulton Bag & Cotton Mills, Atlanta, Ga.

—Henry Lane, overseer with the Dingley & Libbey Co. of Lewiston, Me., is going to South Carolina to accept a position in a large cotton establishment.

—C. L. Lever, formerly of Greers, S. C., is now at the Florence Cotton Mills, Forest City, N. C., as boss spinner.

—J. C. Leadbetter has resigned as overseer of finishing at the Kerr Bag Mfg. Co., Concord, N. C., to accept the position of overseer of the cloth room in the Androscoggin Mills, Lewiston, Me.

—R. B. Lake, for some time assistant bookkeeper at the Slade Mills, Fall River, Mass., has resigned to become paymaster for the New England Cotton Yarn Co., New Bedford, Mass.

—G. W. Murphy, superintendent of the Hogansville Manufacturing Co., Hogansville, Ga., has resigned to accept a similar position in the Unity Mills, LaGrange, Ga.

—C. H. May, of Chicopee, is with the Danielsonville Cotton Mill at Danielson, Conn., as boss carder.

—W. F. Miller has succeeded W. F. Worrall as machinist at the Hamlet Mills, Woonsocket, R. I.

—William A. Nichols, superintendent of the Fall River Manufactory, Fall River, has been appointed superintendent of the Pocasset Manufacturing Co., Fall River, Mass., succeeding Daniel Gilligan, deceased.

—H. C. Phillips, of Lowell, Mass., is superintendent at the Greylock Mills, North Adams, Mass.

—L. Pritchard, formerly of the Boott Mill, Lowell, Mass., is now boss carder at the Vance Cotton Mill, Chattanooga, Tenn.

—Dwight E. Potter has been reinstated at the Willimantic Linen Co.'s mills, Willimantic, Conn., as superintendent of the outside work, a position which he held two years ago.

—Norman Register, master mechanic at the Merrimack Manufacturing Co.'. mills, Huntsville, Ala., has resigned to take the position of chief engineer and master mechanic with the Lowe Manufacturing Co., Huntsville, Ala.

—J. J. Rocoe has resigned as boss spinner at the Valatie Cotton Mills, Valatie, N. Y.

—James Sharples, overseer in the Wamsutta Mill No. 7, New Bedford, Mass., has resigned. Thomas E. Hilton, overseer in the No. 2, succeeds him.

—John N. Sanderson, for many years superintendent of the Renfrew Mfg. Co.'s lower gingham mills, Adams, Mass., is promoted to the general superintendency of the entire plant, including the one at Dalton and the Grove.

—J. A. Torrence, formerly with the Arlington Mills, Gastonia, N. C., is now in charge of the spinning department of the Lynchburg Cotton Manufacturing Co.'s mill at Lynchburg, Va.

—Thomas Webster, overseer of the cloth room of the Ponemah Mills, Taftville, Conn., for the past 18 years, has resigned to accept a similar position in the Baltic Mills, Baltic, Conn.

—W. J. Willett, overseer of spinning at the Lincolnton, N. C., Daniel Mill, has resigned, to take charge of the spinning department of the Louise Mills, Charlotte, N. C.

—G. R. Whitaker, formerly of Henrietta, N. C., and at one time with the Draper Co., Union, S. C., is now employed at the Shelby Cotton Mills, Shelby, N. C., as boss weaver.

Woolen.

—Timothy Anderson has resigned as overseer of the weaving department at the mill of C. G. Wood & Co., Quinapoxet, Mass. Oscar Perry is his successor.

—John R. Brown, formerly with Gordon Bros., Hazardville, Conn., is now superintendent for W. Lowenthal & Co., Cohoes, N. Y.

—Geo. W. Burr, of Lowell, Mass., has recently engaged with the Ludlow Woolen Mills, Ludlow, Vt., as overseer of finishing.

—Jacob Bassler, overseer of the spinning room of the Cheshire Mills, Harrisville, N. H., has resigned to accept a position in Lowell.

—William A. Broadhead has severed his connection with the National & Providence Worsted Mills as assistant designer. He has accepted a position with the Hampden Mills, Hampden, Mass.

—John S. Bellows, formerly superintendent of the Hargraves Woolen Co., North Shapleigh, Me., has taken a position as designer for the Reliance Worsted Co., Woonsocket, R. I.

—Ernest Curran, who recently completed this year's studies at the Lowell Textile School, has accepted a position in the Arlington Mills, Lawrence, Mass.

—F. E. Carson of Pascoag, R. I., has been engaged as boss finisher by the Success Worsted Co., North Chelmsford, Mass.

—W. E. Chamberlain, formerly of the Moosup Mills, Moosup, Conn., has accepted a position as boss finisher with the Cocheco Mills, East Rochester, N. H.

—A. Courteney has accepted a position with the Farwell Worsted Co., Central Falls, R. I.

—Robert Crossley, Maynard, Mass., is now boss dyer with the Saxonville (Mass.) Mill, having taken Ulick Burke's place.

—F. Cook, boss weaver at the mill of Simson & Kirkaldy, Woonsocket, R. I., has resigned to accept a similar place with the French River Textile Co., Mechanicsville, Conn.

—John W. Crowther, for some time superintendent of the Oneko Woolen Mill, New Bedford, Mass., has resigned his position and will leave soon for a two or three months' visit in England.

—George Copeland has resigned as overseer at the Singleton Worsted Mill, Franklin, Mass.

—B. A. Churchill, boss weaver, has changed from Bonaparte, Iowa, to Yountsville, Ind.

—E. W. Cook, formerly of Keene, N. H., is now at City Mills, Mass.

—I. S. Drury, formerly at the Faulkner & Colony Mfg. Co., Keene, N. H., is now superintendent of the Indiana Woolen Mill, Indiana, Pa.

—C. C. Forster has been engaged as boss weaver at the Mechanics Mills, Fall River, Mass., during the absence of Overseer Sullivan, who is now in Europe.

—William Grogan has recently accept-

ed the position of dresser tender for the Cowan Woolen Co., Lewiston, Me.

—George Hinchliffe has accepted a position as superintendent for the Nasonville Woolen Co., Nasonville, R. I.

—William D. Hawkins, formerly superintendent of the Nasonville (R. I.) Woolen Mill, is now filling a similar position with the Seneca Woolen Mills, Seneca Falls, N. Y.

—A. Jewell of Hinsdale, N. H., has recently accepted the position of superintendent of the Hargraves' Woolen Mills, North Shapleigh, Me., succeeding Charles W. Auel.

—Charles Kuehne, loom fixer at the Central Mills, Stafford Springs, Conn., has resigned to accept the assistant superintendency of a factory at Louisville, Ky.

—John A. Mahery has resigned as superintendent of the Atlanta Woolen Mill, Atlanta, Ga.

—M. J. Meagher, of North Chelmsford, Mass., is now boss weaver for the Hampden Woolen Co., Hampden, Mass.

—William Moorehouse, of Sabattus, Me., who graduated recently from the Lowell Textile School, Lowell, Mass., has been appointed assistant professor of chemistry at the textile school.

—John Menzier, formerly of Old Town, Me., is now boss carder at the Beaver Dam Woolen Mills, Beaver Dam, Wis.

—George D. Nash, master mechanic and civil engineer of the Burlington, Winooski and Colchester Mills, Winooski, Vt., also the Burlington Flouring Company, has severed his connection with the above named corporations, and retires from active life, after over 48 years of service.

—Charles E. Pfliegel is now at Terra Alta, West Va., filling the position of overseer of carding and spinning.

—Paul Pruess of Rockville, Conn., has accepted a position in the woolen mill of Graham, Clark & Co., Adams, Mass.

—Thomas H. Robinson, who recently accepted the position of superintendent with the Rochester Manufacturing Co., Rochester, Minn., has resigned and returned to his home in Menasha, Wis.

—William Rogers, for a number of years in charge of the wet finishing department of the Hockanum Mill, Rockville, Conn., has resigned.

—Herbert A. Rowell has secured the position of boss dyer with the Bound Brook (N. J.) Woolen Mills, succeeding C. H. Speak. Mr. Rowell was recently at the Oakland Manufacturing Co., Baltimore, Md.

—Frank Ransenhousen has severed his connection with the Pontoosuc Woolen Mfg. Co., Pittsfield, Mass., to accept a position of assistant overseer in the Oneko Mill at New Bedford, Mass.

—Hiram Rathburn, for many years superintendent or S. F. Cushman & Sons, Monson, Mass., has resigned to take charge of the Riverside Woolen Co., Stafford, Conn.

—E. C. Short has been engaged to take the place of boss finisher for the King & Fildes Co., LaPort, Ind.

—Thomas J. Rigney, formerly of Rochester, N. H., has recently accepted a position as boss finisher with the Collingwood Mills, Folwell Bros., proprietors, Philadelphia, Pa.

—Ernest A. Sutcliffe, who has been boss dyer at the Oneko Mill, New Bedford, Mass., for the past two years, has accepted a similar position with the Ray Woolen Mill of the American Woolen Company, Franklin, Mass.

—M. C. Schuyler, of Claremont, N. H., is now boss dyer at the mill of Taft, Burbank & Murdock, Proctorsville, Vt. He succeeded J. H. Horsfall.

—Charles F. Sowerbutts has been engaged to take the position of boss finisher at the Stephen Mill, North Andover, Mass.

—B. V. Searle, formerly of Trenton, N. J., and Philadelphia, is now with Talcott Bros., Talcottville, Conn., in the capacity of overseer of carding.

—A. W. Scott, Jr., superintendent of the Seneca Woolen Mills, has been engaged by A. B. Patton, general superintendent of the G. H. Gilbert Mfg. Co., to go to their Ware mill in a like position. Mr. Scott was formerly one of the designers of the Globe Woolen Mills, Utica, N. Y.

—Theodore St. George, who has had charge of the carding department in the mill of Talcott Brothers, Talcottville, Mass., is now in Cleveland, Tenn., filling a similar position in the Cleveland Woolen Mills.

—James Taylor, formerly boss finisher at the Consolidated Felt Mills, Amsterdam, N. Y., is now acting in a similar capacity for the Clarksboro Woolen Co., Clarksboro, W. Va.

—James Williams has resigned as overseer of carding for the Riverdale Woolen Co., Northbridge, Mass., to accept a similar position with the Jefferson Mfg. Co., Jefferson, Mass.

—Walter Weeder has become boss spinner for the Somersville Manufacturing Co., Somersville, Conn. He was formerly at the E. E. Hillard Co.'s mills, Buckland, Conn.

—Thomas Winn of Chesterfield, N. H., is now boss finisher for the Ashuelot Woolen Co., Ashuelot, N. H.

Knit.

—P. Z. Bessett of Lowell, who has finished a course at the Lowell Textile School, has accepted a position in the card room of Robert MacKinnon's mill, Little Falls, N. Y.

—W. H. Brayton, Brooklyn, N. Y., has recently been engaged by the Griffin Knitting Co., Griffin, Ga., as superintendent of their plant.

—R. Campbell has been succeeded by F. Young as boss spinner at the Anchor Knitting Co., Almonte, Ont.

—John Davis, boss carder, has resigned his position at the Anchor Knitting Co.'s mill, Almonte, Ont.

—E. H. Everett of Springfield, Mass., has gone to Griffin, Ga., having recently accepted a position with the Griffin Knitting Co.

—John W. Hayes has been appointed overseer in the Beaver Knitting Mill, Hudson, N. Y.

—James Keeler is now overseer of carding for the Hope Knitting Co., Cohoes, N. Y., having succeeded John H. Akin.

Deaths.

—John Doherty Barbour, head of the firm of William Barbour & Sons, Ltd., the largest manufacturers of linen thread in the world, with plants at Lisburn, Ireland, and Paterson, N. J., and a director of the Linen Thread Co. which controls the output of both mills, died in Lisburn, Ireland, last month, the place of his birth, in 1824. Mr. Barbour, after finishing his education in France and Germany, traveled extensively before entering upon his business career. The firm of William Barbour & Sons, Ltd., although established by his father, was founded by his grandfather, John Barbour. John D. Barbour was a man of considerable ability and was prominent in civic affairs as well as in the business world. He had large interests outside of the thread business. He retired from active business about four years ago, leaving the management of the Lisburn, Ireland, plant to his sons. His death will necessitate no material changes in the organization of William Barbour & Sons, Ltd., or the Linen Thread Company.

—Eleazer Boynton, age 76, died at his home in Medford, Mass., June 5. The deceased was the senior member of the firm of N. Boynton & Co., manufacturers of cotton sail duck, up to January last. He held in life many important positions of trust. He leaves a widow, two sons and two daughters.

—Walter A. Peck, Providence, R. I., died in that city recently. Mr. Peck was born in Barrington, R. I., in 1854. His father established the house of Asa Peck & Co., wool merchants of Providence, and the deceased after graduating from the Brown University, became a partner in the firm. About three years ago he retired from the wool business, and had since devoted what time he had spent in business pursuits to private enterprises.

—Carl G. Kirsch, president and treasurer of the Mount Holly (Pa.) Hosiery Co., died in Carlisle, Pa., May 27th. He was born in Germany 37 years ago, coming to this country when a young man.

—Abner M. Lewis, senior member of the firm of A. M. Lewis & Co., Chicago, Ill., died at his residence, 37 Ashland Boulevard, recently. Mr. Lewis was born in Madison County, New York, and was 73 years old. At the time of his death, he was president of the Wool Merchants' Association of Chicago.

—James Lewis Dawes, a well-known business man of New York, dropped dead last month, while leaving for his place of business. He died of heart failure. Mr. Dawes was born in Taunton, Mass., in 1827. He went to New York at an early age, and was for many years engaged in the dry goods commission business.

—Benjamin D. Nightingale, formerly of Fall River, Mass., but for the past two years superintendent of the Nightingale Woolen Mill, Defiance, O., died at Warsaw, Ill. Mr. Nightingale was employed at the Eddy Woolen Mill while in Fall River. He was 42 years old, and leaves a widow and three children, besides many brothers and sisters.

—Alfred Ray, the senior partner of the New York branch of the Boston house of Lawrence & Co., died from diabetes, age about 61 years. He was born in Pittsfield, Mass., in 1840. In 1882 he became the head of the New York branch of Lawrence & Co., of Boston, and so remained till his death.

—John G. Sonneborn, a retired carpet manufacturer, died suddenly of apoplexy in his 85th year, at his home in Philadelphia, late last month.

—Harrison Flint, seventy-five years old, who was the first manufacturer of bunting in this country, and who in 1864 was a partner of Gen. B. F. Butler, in Lowell, Mass., died at Danbury, Conn., June 6th.

—William Powell Mason, Boston, Mass., who was connected with several cotton manufacturing companies, the Suffolk Savings Bank, the Merchants' National Bank and the Edison Electric Illuminating Co., died June 4 in Vienna. He had been abroad for the past six months, and was on his way to St. Petersburg when he died. Pneumonia was the cause of his demise.

—John C. Watts, a member of the firm of John Watts & Sons, the oldest firm of cotton goods manufacturers in Philadelphia, Pa., died late last month, from diabetes. He was one of the organizers and secretary of the Manufacturers' Association, out of which grew the present Manufacturers' Club, and Mr. Watts was its first secretary.

—George B. Waterhouse, one of the best known citizens of Passaic, N. J., died at Camden, Me., June 18, where he had been on a trip for his health. Mr. Waterhouse was treasurer and manager of the Dundee Woolen Company, which operates the Waterhouse mill on Passaic Street.

—George Goslin died recently at his home in Central Falls, R. I. He had been in poor health for two years past, but had been able to attend to business up to about four months ago. Mr. Goslin, at the time of his death, was president of the R. Plews Manufacturing Co., manufacturers of patent tin cylinders for spinning frames and mules, which are in use all over the world. The deceased was a member of a number of prominent clubs.

—South Carolina, Greenville. R. R. Asbury has secured options on lands at Lock No. 1, on the Coosa River. He proposes to generate electricity for sale and also build and operate a cotton mill.

—South Carolina, Rich Hill. The Rich Hill Cotton & Oil Mills Co. has been incorporated with capital stock of $25,000. It is understood that they will build a yarn, knitting or oil mill. Whichever one they decided to erect first, will be followed by erection of the other.

—South Carolina, Yorkville. W. W. Lewis, trustee of the Sutro Cotton Mill, for the bondholders, has been advised to sell the property, and sale will take place July 2nd.

The Perfect Belt Service

Following the use of

CLING-SURFACE.

CLING-SURFACE permanently stops belts slipping, yet permitting clean belts, giving perfectly regular speed of machines.

Allows belts to run easy, never running off, saving frequent taking up.

And keeping the belts water-proof, pliable and in perfect condition.

We guarantee these results and ask you to try it, payment subject to approval after trial.

Cling-Surface Mfg. Co.,
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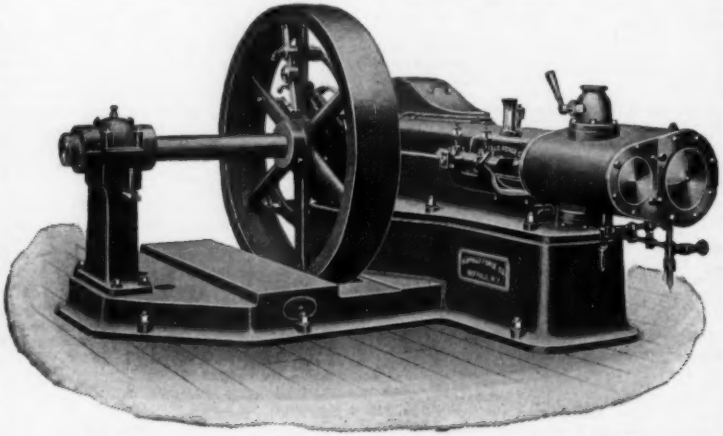
Boston, 170 Summer St.
New York, 39-41 Cortlandt St.
Philadelphia, The Bourse.

Buffalo Forge Company Engines

Horizontal, Vertical, Simple, Compound

Modern Machines by Modern Methods



Buffalo Horizontal Side Crank Engine Running in Oil

Buffalo Forge Company, BUFFALO, N. Y.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Arc Lamps.
Lea Manufacturing Co., Elwood, Indiana.

Architects and Mill Engineers.
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Gray, Arthur F., Exchange Bldg., Boston.
Lockwood, Greene & Co., 93 Federal St., Boston, Mass.
Praray, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
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Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
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Warren Bros. Co., 143 Federal St., Boston.

Chemicals and Apparatus.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

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Taylor & Stinson, 482 Bourse, Phila, Pa.

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Cling Surface Mfg. Co., Buffalo, N. Y.

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Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
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Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
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Cotton Softeners.
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Wilmington Oil Co., Wilmington, Del.

Cotton Waste.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Decoration Wash for Interiors.
Moore, Benj. & Co., Brooklyn, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.

Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-136 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2500 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co, Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Knause Bleachery, Hamburg, Pa.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa
Rowland, Samuel, Schuylkill Haven, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Automatic Dyeing & Scouring Machinery Co, Box 80, Madison Branch, New York.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros., Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Ledgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.

Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, C. H., Paterson, N. J.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St, Phila.
Corey, S. J, 273 Congress St, Boston.
Dillon & Co, 20 Cedar St, New York.
Dubois, A. N., 2170 Ledgely Ave., Phila., Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A., & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Jones, J. Howell, 18 Burling Slip, New York.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J, & Co, 182-184 Front St, N. Y.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Ross, W. A. & Bro., 100 William St., N. Y.
Schoellkopf, Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H S., 115 So 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Lighting Apparatus.
Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co, Akron, Ohio.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds
See Automatic Feeds.

Filters.
Scaife, W. B. & Sons Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F, Boston.

Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N. J.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Docker, Foster Co. Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co, Boston.
Rusden Machine Co., Warren, R. I.

Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.

Key Seaters.
Leisenring Mfg. Co, Philadelphia, Pa.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.

Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.

Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N. J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.

Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery (Cutters.)

Goodwin, J. C., Second and Diamond Sts., Phila., Pa.

Knitting Machinery.

American Knitting Machine Co., 6th and Arch St. Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 John St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.

Knitting Needles and Supplies.

Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co , Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co , Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co. Lakeport, N. H.

Knotter for Spoolers.

Barber & Coleman, 504 Sears Bldg., Boston.

Labeling Machine.

Saranac Electrical Mfg. Co., St. Joseph, Mich.

Laboratory Outfits.

Bullock & Crenshaw, 528 Arch St. Phila, Pa

Looms.

American Loom Co., Readville, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St , Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Ross, Hugh R., Belfast, Ireland.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Mass.

Loom Pickers.

Loom Picker Co., Biddeford, Me.

Lubricators

Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.

Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.

Gerry, George, & Son, Athol, Mass.

Machinery Dealers.

Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.

Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.

Mails.

Walder, J, Paterson, N. J.

Measuring and Folding Machines.

Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg , New York.
Parks & Woolson Mach. Co , Springfield, Vt.

Mechanical Draft.

Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Mercerizing Machinery.

Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St , Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.

See Architects & Mill Engineers.

Mill Baskets.

Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.

See Brushes.

Mill Builders and Engineers.

Ferguson, John W, Paterson, N. J.

Mill Supplies.

American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
National Supply Co., Paterson, N. J.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Star Mfg. Co., Stamford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.

Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.

Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Cabinets.
New York Oil Cabinet Co., New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Paint.
Moore, Benj. & Co, Brooklyn, N. Y.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Paper.
Beck, Chas. Paper Co., Ltd., 607 Chestnut St., Phila.

Paper Boxes.
Beck, Chas. Paper Co., Ltd., 607 Chestnut St., Phila.

Paper Box Machines.
Beck, Chas. Paper Co., Ltd., 607 Chestnut St., Phila.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington, D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
American Perforated Metal Co., 171 Wooster St., New York.
Beckley, A. J. & Co., Garwood, N. J.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Carpenter, Geo. B. & Co , Chicago Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 23d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Lambeth Rope Corporation, New Bedford, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford. J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Phillips Co, The Thomas, Providence, R. I.

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.

Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Lambeth Rope Corporation, New Bedford, Mass'tt
Link Belt Mfg. Co., Chicago, Ill.

Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave. Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford. Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Cards and Mounting.
Merchants Sample Card Co., 33 Sullivan St., New York.

Scales
Sweet& Doyle, Cohoes, N. Y.

Schools.
American Correspondence School of Textile, New Bedford, Mass.
Georgia School of Technology, Atlanta, Ga.
Lee's College, Charlotte, N. C.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Separators, Oil and Steam.
Austin Separator Co., Detroit, Mich.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.

Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co. 968 Franklin St., Phila.
Potter, R. V. B., 231 Chestnut St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Sky Lights.
Drouve, The G. Co., Bridgeport, Ct.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Standard Thread Co., New York.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Coleman, 504 Sears Bldg., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Smith & Meinken, New York.
Wells, Wilfred, 805 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Austin Separator Co., Detroit, Mich.
Butterworth, H. W. Sons Co., Philadelphia.
Rusden Machine Co., Warren, R. I.
Jenkins Bros., New York.
Sturtevant Co., B F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.

Steam Valves.
Jenkins Bros., New York.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia, Pa.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1517 East York St, Phila, Pa.

Telephones.
Mianus Electric Co., Mianus, Conn.
Plummer, F. O. 620 Atlantic Ave., Boston.

Temples.
American Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.

Tension Pulleys.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., 1733 Barker St., Phila., Pa

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. & Sons, Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Time Recorders.
Simplex Time Recorder Co., Gardner, Mass.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.

Tower Clocks.
Howard, E. Clock Co., Marlboro Building, Boston.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve, The G. C o., Bridgeport, Ct.
National Pancoast Ventilator Co., Philadelphia, Pa.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Wing, L. J. Mfg. Co., 95 Liberty St., N. Y.

Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.

Warp Stop Motions.
Am. Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.

Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Watchman's Clocks.
Am. Watchman's Time Detector Co., Broadway, N. Y.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., Marlboro Building, Boston.
Nanz & Co, 127 Duane St., New York.

Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.

Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street Boston.

Wood Pulleys.
Beggs, James & Co., 9 Dey St., New York.
Dodge Mfg Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich

Wool Burrer.
Cheesman Co., 27 William St., New York.

Wool Cleaning Compound.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Woolen and Worsted Machinery.
Altemus, W. W. & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Cheesman Co., 27 William St., New York.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed. & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Shoddies.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.
Lambeth Rope Corp., New Bedford, Mass.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
Buckingham & Paulson, 83 Leonard St., New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
New England Cotton Yarn Co , New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns Wool Spun.
Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.
Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co , New Bedford, Mass.

Glazed Yarns.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co. J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twine.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.
Barnesville Mfg. Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co. Pawtucket, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Mercerized Yarns.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co., Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Mohair Yarns.
Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.
Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, New York.
Mason, Dan'l, Voorhis Mill, Paterson, N. J.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.
Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co.. Pawtucket. R. I.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.
Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Pocasset Worsted Co., Thornton, R. I.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co, 47 Leonard St, N. Y.

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For one year a Superintendent for a Textile Exposition. He must be fully competent to secure exhibits and to erect and operate all classes of textile machinery. He must have had a business acquaintance with the leading manufacturers of all kinds of machinery and supplies connected with the textile trade and must have a working knowledge of the products of the various yarn, cloth and knitting mills throughout the United States. Give full information relative to experience, reference and salary expected to TEXTILE EXPOSITION, care Textile World, Boston, Mass.

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A 2000 Spindle Yarn Mill, located in the heart of Cotton Belt, fully equipped, abundant water supply, cheap fuel, ample power, etc. For further particulars apply to "Lease," care Textile World, Boston.

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Steady and remarkable success has attended the mills located on the Southern. It is the great Textile Line of the South. Mill Men and Mill Investors should investigate the advantages our districts afford.

We have now a number of excellent points for new Cotton Mills, or for Knitting Mills, where local capital will join with that from the North in new enterprises. If you are interested, write us.

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Land and Industrial Agent, Southern Railway

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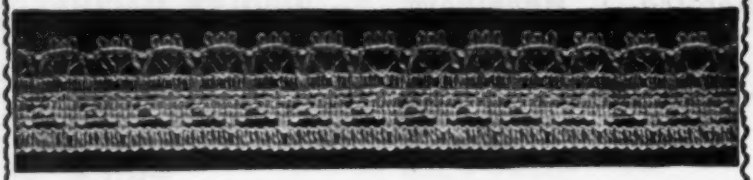

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SITUATIONS WANTED.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jackets and mules, and Crompton & Knowles.

1768 **Supt. and Designer** in a worsted or woolen mill. Prefers worsted mill. Now employed as designer and assistant supt., but is competent to take charge of a mill. Is familiar with all makes of machinery, and has manufactured nearly all classes of goods. Excellent references.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1823 **Supt., Designer or Overseer** of weaving. Age 42; English; married. Large experience on fancy cassimeres, cloakings, beavers, meltons, plaid backs, golf caps, rugs, union worsted suitings and government work, flannels, face-finished goods, and can make them up from the yarn. Is familiar with Crompton & Knowles and English looms.

1398 **Woolen Superintendent or Designer** of recognized ability and at present employed as a superintendent of 36 set woolen and worsted mill. He finds it necessary to remove from New Jersey on account of his wife's health. His past record is first-class and this is an unusual opportunity to secure the services of a first-class superintendent.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1856 **Supt. Worsted Yarn Mill.** 35 years old; Scotch; married. All kinds of worsted yarns in the gray mixtures and mottled, especially fine numbers. Bradford system.

1796 **Supt. of Worsted Mill.** Age 35; English; married. Would take position as overseer of spinning. Has had six years' experience in a mill as overseer of spinning, drawing, combing, scouring and sorting, also twisting, doubling, skein winding and dresser spooling.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1806 **I would like** to correspond with some president or manager of some cotton mill now running or any new mill now being constructed, who would like to engage a competent superintendent. I want to engage with a cloth mill of any number of spindles not exceeding 10,000. My price is $1,000 a year, with no loss of time. I am a practical manufacturer, of long experience as overseer and superintendent. I am a good manager, full of push and energy, and I have a good record as a hustler for big productions and making money for my employers. Strictly temperate.

1802 **Supt.** or agent of small cotton or knitting mill, or would take a position as overseer of cotton carding. 33 years old; American. Has worked on sheetings, shirtings and fancy goods, and hosiery and mill supplies. Wants about $25 per week.

1867 **Assistant Manager** who understands the handling of cottons and linens, desires position in a cotton mill. 24 years of age; American; unmarried. Can satisfy anyone in regard to references, experience, etc.

1872 **Supt. and Carder of Cotton.** Has handled all classes of goods 35 years; American, married. Best of references.

1806 **Supt. of a Cotton Weaving Mill**, colored or white, 5,000 to 10,000 spindles; or overseer of weaving in a cotton mill, on any kind of work and any size mill, white or colored. Will go East, West, North or South, Canada or Mexico. Has had good and long experience. A married man; 40 years old, strictly temperate. Can give references as to ability and character.

1527 **Supt. of Cotton Mill**, or overseer of mule or ring spinning is open to a position; 16 years experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc, etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills.

1898 **Cotton Supt.**, 33 years old, married, and an American, experienced on coarse and fine yarns and white goods, is open to a position. Conversant with all standard makes of cotton machinery. Can refer to prominent Mass. men in the cotton trade.

1896 **General Manager** and Superintendent of cotton mill desires position; 37 years old; single; English. 18 years' experience on yarns, flannelettes, denims, grays, and shirtings. Good references.

WOOLEN CARDERS.

1798 **Boss Carder,** or carder and spinner. Age 49; English. Large experience on fine, medium and coarse wool, also wool, cotton and shoddy mixes, cassimeres, flannel , blankets, kerseys, meltons, beavers, government goods, etc. Excellent references and first class man in every respect. Was nine years boss carder in England and has held good positions in this country as boss carder and spinner.

1899 **Worsted Carder,** 9 years in large mill in Lawrence, would like a position; 23 years old; English; single. Has worked on almost all grades of stock, and understands all well-known makes in worsted cards. Good references.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 year of age ; American; married. Can refer to responsible parties Moderate wages desired. Will go to any part of United States.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1660 **Overseer of Woolen Carding.** Does not want to go out of N. E. States. Age 48; American; married. Many years' experience as overseer and has excellent references. Has worked on nearly every class of goods manufactured in N. E., and is familiar with nearly all machinery.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Fettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1880 **Second Hand in Card Room** or Second Hand of Combers. 25; America ; unmarried. 6 years' experience on fine and coarse cotton, including Sea Island, Egyptian, Peeler, etc. Best of references.

1884 **Overseer of Cotton Carding.** 42 years old; French; married; desires a position in any mill north of Pennsylvania. Long experience in several large New England mills. Familiar with all makes of English and American machinery. Best of references. Has one son in family, third hand in card room.

1759 **Overseer of Carding Room.** Age 26. Has worked on fine and coarse yarn, and understands all makes of machinery in carding Good manager of help by speaking different languages. At present overseer in a small mill. Excellent reference as to character and ability. Wants from $3.00 to $3.50 per day.

1320 **Boss Cotton Carder.** Has been overseer for 12 years Is at present employed, but desires to change for good reasons Would accept $2.50 a day. Age 40; American, married.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1878 **Woolen** Overseer of Weave room. American; married. Very large experience in New England mills, on union cassimeres, chinchillas, dress goods, meltons, kerseys, fancy woolen suitings, and government goods, also fine fancy worsted suitings. Knowles & Crompton looms. A 1 references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1805 **Boss Weaver.** Has worked on fancy dress goods, cashmeres, ginghams, fancy worsteds, coatings, lenos and Jacquards. Has also some knowledge of designing. English; age 36.

COTTON WEAVERS.

1806 **Wanted a Situation** as Boss Weaver or Second Hand, on any kind of plain weaving in cotton, wool, or jute mill. Has had 10 years' experience as boss weaver and 15 years' experience as second hand and loom fixer. Am a married man, sober, steady, a good manager of help and a hustler for good productions. Can give good references as to ability, sobriety, and character. Will go to any part of U. S., Canada or Mexico.

1738 **Overseer of Weaving,** Drawing in, Warping, Slashing, and all preparations, 14 years experience in colored mill in Manchester, Eng., and two years in this country. Age 37; English; married. Has worked on sateens, drills, dress goods, zephers, turkish towels, and can pick out own pattern for weaving and drawing-in. Understands the different makes of looms. Wants $3.00 per day.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1752 **Overseer of Cotton Weaving,** or Supt. in small mill. 30 years of age; American, and married. Have worked on all kinds of plain and fancy cottons and thoroughly understand jacquard work. Will go anywhere in the U. S. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

WOOLEN SPINNERS.

1691 **Boss Spinner.** Large experience in first-class N. E. mills on flannels and all kinds of fancy cassimeres. Englishman; age 50; married. Refers to past employers.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2-; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1862 **Overseer of Spinning.** Is used to Johnson & Bassett, Davis & Furber and Campbell & Clute machines. Has had 18 years' experience as an overseer. Is a handy man, and can give good references. Wool, cotton and mixtures.

1834 **Overseer of Spinning.** Experience covers eight years as second-hand and fixer and eleven years as overseer. Has handled nearly all kinds of goods. Is an expert fixer. Worked on Davis & Furber mules. Age 38; American; married.

1820 **Overseer in Woolen Spinning.** Has worked on ladies' dress goods, cassimeres, cheviots, beavers, all wool, and wool and cotton, and wool, cotton and shoddy mixes, from 1 run to 9. Davis & Furber Johnson & Bassett and Platt mules and jacks Refers to past employers. Wants $2.50 per day.

COTTON SPINNERS.

1068 **Overseer of Frame Spinning,** Twisting, Spooling and Warping desires position and would accept that of second-hand. Has worked in some of the best mills in N. E. (37 years old, an American and single) on Nos. running from 4s to 80s. Is familiar with Whitin, Mason, Biddeford and Lowell machines. Will go to any of the N. E. or Middle States. A1 references, and does not expect a fancy price.

1869 **Overseer or Second Hand** of ring spinning, cone winding, twisting, spooling, cop winding, reeling. 27 years of age; American; single. Of good experience on fine and coarse cotton yarns. Competent and reliable and used to handling all the well known makes of machinery. Will go anywhere. Good references.

1779 **Boss Mule Spinner.** Now employed in South, but wants to change on account of climate. Has had 15 years' experience as a cotton spinner, working up to overseer from back boy. Is well acquainted with all makes of English mules, also latest Mason mules, and is familiar with the working of all drafts and twists. Married; 30 years old, and temperate.

1889 **Boss Spinner of Cotton.** 30 years old, American; married. Familiar with all classes of hosiery yarns and all makes of machinery; 16 years' experience. Wages expected $125 per month. Best of references.

1690 **Cotton Mule Spinner.** Age 43; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

KNITTERS.

1905 **Boss Knitter,** age 26 and married, with six years' experience on all kinds of Jersey ribbed knit ladies' underwear, would like to secure a position as foreman knitter in a small mill in Pennsylvania, or as assistant in a large one. Practical experience on Nye & Tredick, Stafford & Holt, McMichael & Wildman, Brinton and Champion rib machines; understands all kinds of sewing machines and repairs, also boilers and can run them on economical plan. Can do machine repairing in general, having had early training as machinist. Is strictly temperate, and can give references.

1889 **I would like** to correspond with some president of some cotton mill or large hosiery mill now running, or any new mill now under construction or proposed as to position of manager. I am a practical manufacturer of long experience and have just finished building and equipping one of the largest hosiery mills in the South. I am well posted on the manufacture of hosiery yarns and hosiery of all grades. Non paying mills can be put on paying basis under my management, if conditions are possible. Only object in leaving present position as general manager is climate is against his health.

1892 **An Overseer or Fixer** on Stand ard, Mayo, Scott and Williams, S. & C. rib, Britton and loopers, desires position. Has worked principally on fine seamless hosiery. 21 years of age; French; single; good references; six years' experience.

1777 **Overseer of Knitting.** Has worked on ladies' and infants' underwear. Standard makes of machines. Wants $21 per week. Age 33; English. Refers to past employers.

DYERS.

1846 **Boss Dyer** or Bleacher. Age 28; English; married. Has worked on mostly all kinds of dyed and bleached goods. Understands indigo blues and alizarine colors for bleaching and fulling purposes on cotton goods. Wants to change as place he is in does not agree with him.

1303 **Manager of Dye Works,** or boss dyer, who has been connected with some of the largest dye houses both in England and the United States is open to a position. Understands piece dyeing of all kinds, cotton, wool, mohair and alpaca; pile fabrics; knit goods, wool and cotton; yarns, wool, silk and cotton; raw stock; and wool and merino shoddies Is 36 years old; English; married. Good references from a number of prominent men in the textile industry.

1839 **Boss Dyer,** English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as satinets, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarn. Steady and reliable, and best of references. Would work for fair pay.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch; married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 38 years old; married, and an American. Will accept a reasonable salary.

FINISHERS.

1792 **Boss Finisher,** with over 20 years' experience on all kinds of woolen and worsted goods. Learned business in one of the best woolen mills in Scotland and has also had experience in some very good mills in this country. Strictly temperate and steady, and can give good references as to character and ability. Wants position in a good, steady-running mill at once. Age 38 years; married.

1887 **Overseer of Finishing** in a cotton or worsted mill, having several years' experience on cotton flannels, shirtings, blankets, crashes, cotton and worsted dress goods, and carriage cloths, is open to a position. 25 years of age; American; married, and strictly temperate. Will go to any part of the United States, except West. Best of references.

1902 **Overseer of Finishing,** 16 years' experience on woolens, worsteds and cottons, would like a position in Mass. or R. I. mill. 42 years old; American; married. Two boys in family who can run shears and press. Good references.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1870 **Wanted,** position as cotton finisher. American; age 48; married. Thirteen years' experience in finishing interlinings, shirtings, sheetings and cambrics, in one of the oldest and largest bleacheries in the country. Good manager of help. Can furnish reference.

DESIGNERS.

1445 **Designer or Finisher,** or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

1838 **Designer,** assistant supt., assistant designer, overseer of weaving, secondhand large weave room, loom fixer, boss spooler, dresser, or mender Age 48; American; single. Worked on worsteds, cassimeres, dress goods, blankets, chinchillas, cloakings, etc. All patterns of Crompton & Knowles looms, Davis & Furber spooling, dressing and weaving machinery, and Worcester warp compressor.

1888 **A German Designer,** who understands all machinery necessary for the manufacture of men's wear, woolen or worsted, is open to a position at $3000 per year. Eight years' experience in Germany and five years' in one of the largest mills in the United States. 33 years of age, and single. Best of references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

MISCELLANEOUS.

1803 **Roll Coverer.** I have done the work for a number of the largest cotton and worsted mills in this country, and am well known throughout the trade. Have been in the business 35 years, and can furnish stock and tools. Would be glad to take piece-work, if shop is furnished, or would take a place by the day. Can furnish best of references.

1762 **Chemist.** Age 23; American. Wants a position in dye works, print works or bleachery. $15 a week to start on. Excellent references.

1835 **Beamer, Twister,** also understands drawing in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1744 **Fixer.** Age 24; American; single. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 a week.

1851 **Machinist in Woolen Mill.** Can repair looms, cards, mules, etc., of every description, also worsted machinery. Understands forging tools and has fair knowledge of electricity. Ten years experience in some of the best mills in New England.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 24 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow, Union Special, Lamb, Pepper, and Hepworth and Beattie loopers

1873 **Master Mechanic** in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sewing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1881 **Paymaster or Bookkeeper.** Agent or Manager Wood or Iron working plant or small cotton mill. 28 years' experience. Expert accountant. Can take charge of all the office work in large factory or do all myself in small factory. Good references. Will go anywhere in New England or Middle States.

1704 **Boss Dyer.** Age 36; English; single. Is familiar with dyeing cotton yarn and warp both for bleaching, fulling and other purposes. Has dyed for the best firms in England, also for export work.

1885 **Chief Engineer,** or master mechanic; 20 years' experience in large Massachusetts and New Hampshire cotton mills, is open to a position in any part of the United States. 39 years old; married, and an American. Understands all modern makes of motive machinery, including engines, boilers, pumps, electrical machinery, etc. Good references.

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SELLING DIRECT FROM MILLS.

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Selling Jobbing Trade Exclusively.

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Charleston Export & Commission Co.

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for the Underwear Trade.

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Successors to FLEMING & CHAPIN.

229—CHURCH ST.—231 PHILA.

Incorporated 1899.

AMERICAN COTTON YARN EXCHANGE

AMERICAN

Cotton Yarn Exchange

COMBED AND CARDED COTTON YARNS

From Northern and Southern Mills.

American, Egyptian, Peruvian and Sea Islands.

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67 Chauncy St.,

BOSTON, - - MASS.

Long Distance Telephone, Boston 1100.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, **Philadelphia, Pa.**

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MILL ARCHITECTS AND ENGINEERS,
95 FEDERAL STREET, BOS ON, MASS.
Entire Fifth Floor.

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Exchange Building, 53 State St., BOSTON, MASS.
Plans and Equipment of Cotton and other Textile Mills a specialty.
Valuation of Mill Properties.

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Architects and Mill Engineers.
Banigan Building, PROVIDENCE, R. I.
Plans and Specifications furnished for the Construction and Equipment of Cotton Woolen and Carpet Mills, Bleacheries and Dye Works.
Praray's Improved Construction for Mills, Etc., a Specialty.
Old Mills Re-organized and Extended.

Lee's College
PRACTICAL BUSINESS
CHARLOTTE, N. C.
SCHOOL OF CORRESPONDENCE.
A fine Textile Course by mail. Situations secured. Write at once for full particulars.
D. L. LEE, President.

Simplex Time Recorder.
Three Sizes for 30, 50 and 100 People
2 Styles—Regular, allowing as many to register as can reach the machine.
Interlocking, allowing but one to register at a time.

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Patent Linen Winder for Shuttle Bobbins

With Patent Variable Motion.

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We also build the best COP WINDING MACHINE on the market. Write for particulars.

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FOR ALL LINES OF MERCHANDISE.

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The Best is the Cheapest.

It is BETTER and CHEAPER to wind yarn by the "Universal" system before shipment from the mill, thus insuring perfect delivery to knitting machines without rewinding.

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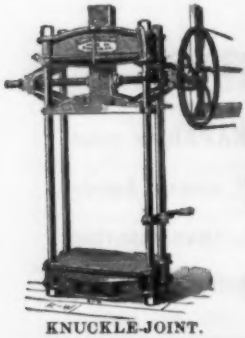

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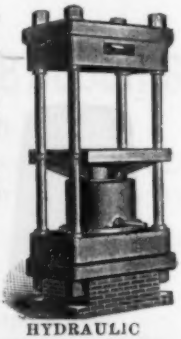

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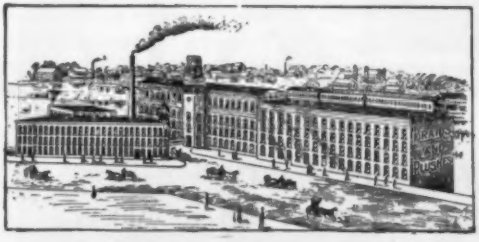
TO SPOOL FROM COP, SKEIN, OR BOBBIN.



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Mohair and Worsted

YARNS.

Mohair Plushes,
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ESTABLISHED 1861.

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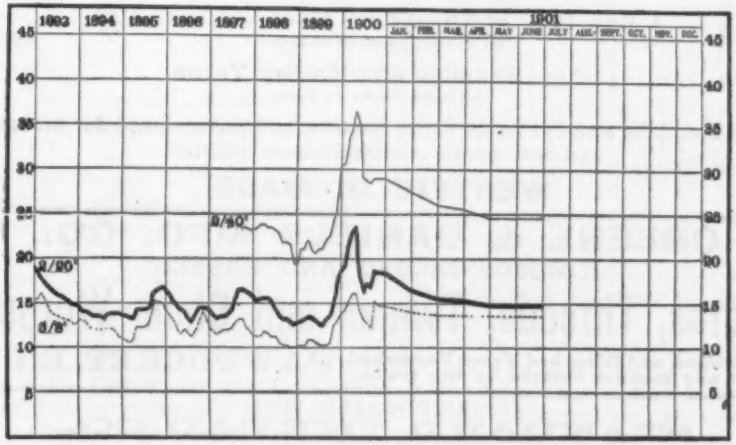

GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn.

Practically no change has taken place in the condition of the cotton yarn market since our last issue. The curtailment of production by Southern mills has continued, but not to such an extent as to restore prices to a healthy basis. Quotations are still below the cost of manufacturing, and this difference has been somewhat increased by the strengthening of prices for the raw material without any corresponding advance in the price of yarn.

Coarse counts are still the weakest feature of the market. Value of these grades are depressed, not only by the dull conditions in the knit goods and weaving trades, but also by the presence of an enormous stock of these yarns which have been manufactured by Southern mills running night and day for the past year or two. The trade is reaping the inevitable result of such a policy.

Prices for fine yarns, on the other hand, are depressed owing to the depression in the goods trade, but values of these higher grades of cotton yarn have not been subject to the depressing influence of large stocks on hand; consequently, any increase in demand for fine yarns is met by an immediate strengthening in quotations, while orders for coarse counts are supplied from stocks which have for many months been awaiting a market.

Quotations in the absence of a demand for goods can be only nominal. We quote as follows:—

Good mule yarn basis:—

10s	14¾ to 15¼
14s	16 to 16½
16s	16½ to 17
18s	16½ to 17½
20s	17 to 17½
22s	17½ to 18

Warps:—

14s to 16s	13 to 13½
20s	13 to 13½
26s	14 to 14½
14/2	13½
16/2	13½
22/1	13½ to 14
24/2	14½
30/2	15 to 15½
40/2	22 to 23
20/2	13¼ to 14

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

INCORPORATED 1884.

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Manufacturers of

SPOOL COTTON

For the Manufacturing Trade.

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BARNESVILLE MFG. CO.

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HOSIERY AND UNDERWEAR YARNS,

Peeler, Bleached, Egyptian or any colors desired. Also,

FINISHERS AND BLEACHERS

of piece goods, underwear, towels, yarns, etc.

THE ONLY USERS OF JACKSON'S FORMULA OXIDIZED BLACK FOR HOSIERY.

We solicit your patronage. Work Guaranteed.

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INDIAN ORCHARD COMPANY,

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Manufacturers of - - - -

COTTON WARPS AND YARNS

In gray and all colors, single or in any twist.

NOVELTY YARNS

In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

Skein:—

14s to 20s	13 to 13½
22s	13¾
14/2	12¾ to 13
16/2	13 to 13½
20/2	13¾ to 14
30/2	15
40/2	20 to 22

Philadelphia Yarn Market.

Spinners are continuing to make yarn below cost. Cotton keeps high. There is considerable volume of business. It seems as if spinners preferred to run their plants at a loss, rather than shut down entirely, but they can't keep it up indefinitely.

Some recent curtailments will soon have an effect on the market, as obligations on cotton are being wiped out. The present market for the staple is very high, and yarns are selling on a basis of much lower figures. The following represents near the market price for yarn.

Southern cones:—

6s to 8s	12½ to 13½
10s	13 to 14
11s to 12s	13¾ to 14
14s and 16s	14 to 14½
18s	14¾ to 15
20s	15 to 15½
22s	15 to 16
24s	15½ to 16½
30s	17 to 18
40s	24 to 26
50s	30 to 32

Spinners are hoping for better prices, and trying to get better prices, on account of the present advance in cotton. Possibly higher figures would be warranted today.

Woolen Yarn.

Spinners of woolen yarn are expecting more orders in the future—even though some spinners are up to practically their full capacity—we hear from manufacturers, who state, that up to June 30th they secured but few orders.

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

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Mule Spun Hosiery Yarns, Carded and Combed.

Colored Yarns, Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns, Single and Twisted, Carded—Combed—Bleached

Fine Yarns, For Electrical Purposes

All Numbers 4 to 200.

From

American Peelers, Sea Island, Peruvian and Egyptian Cotton.

BENNETT, HOWLAND, ROTCH, N. B. SPINNING, COHANNET, NEMASKET, GLOBE, SANFORD, } **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

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FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20.000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

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DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK,

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

but after the 4th of July they expect a great rush of orders and more machinery will have to be put on their work to get orders out promptly to meet the demand.

On the other hand spinners state we would like to take on more work but we have all we can attend, and if we try for more business and take on further business we will be unable to please anyone. Even where consumers ordered early they are finding it difficult to get yarn promptly, and are at loss to understand why this state of affairs should exist.

Notwithstanding the fact that spinners are busy, knitters have been getting no orders and it is next to impossible to induce buyers to purchase more than limited amounts of material. Manufacturers are undoubtedly short of stock and not only that but large knitters who three years ago stocked up to a great extent are out of all this material. Said one of them; "We have bought but very little fine noils and Austratian lamb's wool for the last three years, as we have been using material purchased under free wool—we are all out now, and we don't know what we shall do."

As it is, there is a hand to mouth ordering of stock and the mills are undoubtedly following the policy of their customers. A salesman may see his customer at one time and secure no orders whatever; when he returns to his home he will receive an order for immediate delivery the first of which is to be forwarded by express.

Manufacturers are without stock, and in this condition, if a demand for fabrics comes, there undoubtedly will be a great rush to cover. Manufacturers of underwear state that it has been impossible to induce consumers to purchase and no amount of talk will change conditions. Western buyers came to New York, looked stocks over and went home without purchasing. It is the belief that consumers have no large stocks on hand, but are afraid to buy. The cold spring undoubtedly has retarded business. It was good judgment for manufacturers to go slow in ordering. While it

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FANCY HOSIERY YARNS
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YARNS 40s and above. AND
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COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
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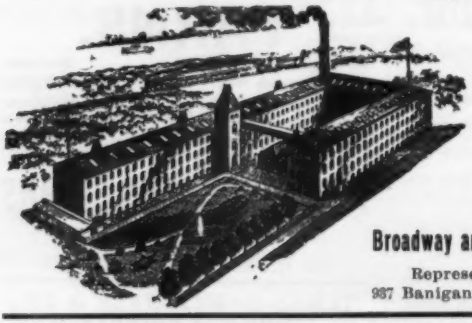
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

TRY OUR
SILKINE Also **LISLE SILK FINISH**
For Hosiery, Knit Goods, Yarn, Fast Black and Bleached Goods
O. K. SOAP CO., 968 Franklin St., PHILA.

HOWLAND CROFT, SONS & CO.



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Fine Worsted Yarns

OFFICE AND MILLS:

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Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

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Jacquard Harness Twines of all kinds on hand and made to order.

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Selling Agent for—

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MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 220 CHESTNUT ST., PHILA.

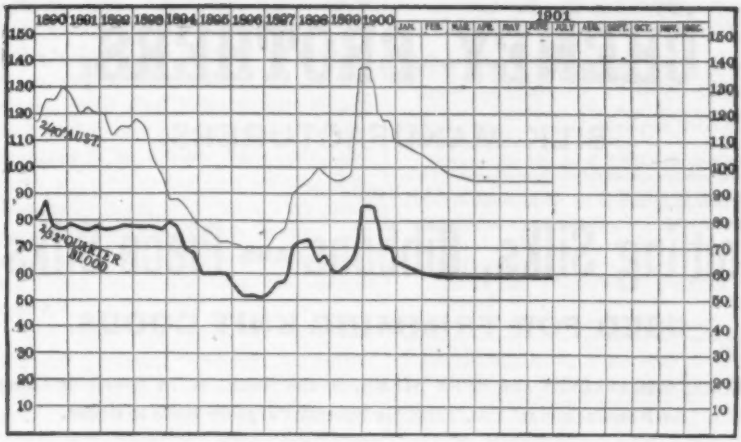

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

has been good policy to wait, that policy should not be followed too far, because a demand will certainly advance prices.

Worsted Yarn.

Worsted yarn spinners are running unevenly; some have orders, which they are pushing hard to deliver, and others have no orders. Weavers manufacturing clays, undressed worsteds and serges are busy with orders which will last until September, but even though busy they will not order yarn for more than actual requirements.

About all the mills have ordered yarn for heavy weights, and do not know what yarn they will require for

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

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KROUT & FITE MFG. CO.,
Manufacturers of
SILK and COTTON NARROW FABRICS
Spool Tapes a Specialty.
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Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

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929 Chestnut St., PHILADELPHIA.
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186 Franklin Street, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double and Twist, **COTTON WARPS**

HOUSATONIC, MASS. 4s to 60s.

COTTON YARNS

from 2s to 26s single and ply.
SPECIALTY—FIRE HOSE CORD and YARNS put up on tubes wound on Universal System.

WHITTIER MILLS, - - - - - **SPRINGFIELD, MASS.**

YARNS

SOLIS : : BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

light weights. The belief is that much half blood yarn will be used in from 2/30s to 2/36s. Manufacturers will not place orders before July or August, while piece dye fabrics are selling well. The fancy worsted end of the business is in a very bad state, and mills are getting but few orders. Undoubtedly there will be a very good duplicate business next month, and much more worsted yarn will be used than has been the case for several years.

Now that the price of yarn has reached a normal condition the cotton worsted fabric will not be so prominent, and, consequently, the manufacturers who heretofore used cotton yarn will use worsted yarn. Many of the clothiers have been badly "stuck" on this cotton cloth and are selling at a loss to get rid of it.

Clothiers state that business is good in the western part of the country, but in the East buyers will only place orders with an "if." Much half blood yarn is being sold, and yarns in No. 2/26s and 2/36s are being bought in good quantities.

There are other uses for worsted yarn that of the loom, and one is that which the fad for ladies' worsted knitted gloves has produced. Knitters are running on these gloves to an extent which has never been known before, and have orders which will keep them busy until December, running as hard as possible.

Sweaters and bathing suits are useing large amounts of yarn.

J. BROADBENT & SONS,
Woolen Yarns
for Knitting and Weaving, al o Wool Spun Cotton Yarns. Equipment first class, practical experience, small expenses, and low prices. Will take work on commission.
UNIONVILLE, CONN.

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MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } **Cotton Yarns.**
Jacquard and Harness Twines.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
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Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

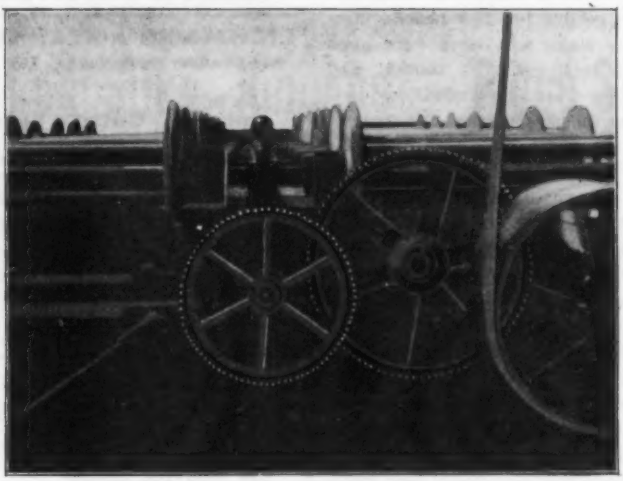
Eddy & Street,
COTTON, WOOLEN, **YARNS AND BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

DAN'L MASON,
Voorhis Mills, PATERSON, N. J.
BUYS JOB LOTS in colored and raw **SILK YARNS.**
Cash Advances on Sales and Prompt Returns.

A NEW DYEING MACHINE.

The invention of a practical dyer who is using it with perfect success.

It is simple, very much cheaper than other machines, does uniform work, and requires no attention.



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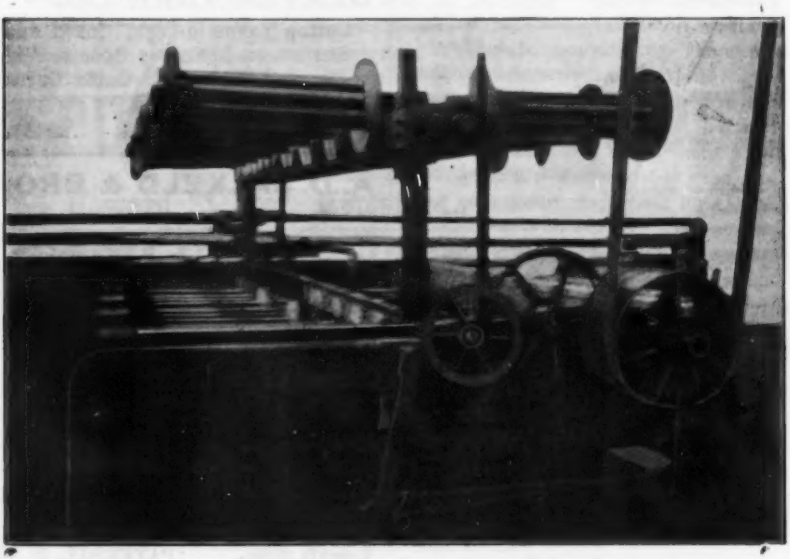

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The French spun worsted yarn spinners are certainly doing but very little with knitters either of underwear or hosiery, as both branches of this industry are very slack, and knitters are placing no orders, as many ordered early and are not duplicating. This will probably change within the next month or so and a good business will result. Some French spun yarn is being sold to makers of undressed worsted to get the proper effect. Top makers are very dull and are securing but few orders although many prices are being quoted for unlimited amounts which are not in existence.

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Mixed fabrics of wool and silk furnish the best illustration of the effects of temperature on the dyeing of these materials. Although in many respects widely different from each other, they are both of animal origin and one would naturally suppose that they would act the same in the process of coloring. To a certain extent this is true, but the silk can often be mordanted with success in a cold bath, whereas this is not the case with wool. It may be stated as a general proposition that the best results in dyeing are secured at a lower temperature in the case of silk than with wool. This well-established fact serves as a guide in coloring mixed fabrics.

There are a few acid dyes which can be applied equally well to both silk and wool at the boiling point, but it is frequently necessary, both in solid colors and two-color effects, to

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color the wool first at the boiling point, and then the silk either in a cold or luke warm bath, and with different dyestuff. Some dyes, such as Rhodamine, are more rapidly absorbed by silk than by wool, even at a high temperature, and contrasting effects can be obtained in this way with any mixed fabric in one bath.

By coloring in baths of different temperatures nearly any shade or combination of shades may be obtained on mixed fabric of silk and wool. It is even possible to color fabrics containing wool, silk or cotton, in three different shades. This is done by coloring the wool first with an acid color at the boiling point, the silk with another color at a temperature of 45° C., and lastly the cotton in a cold bath with a direct dye. A great variety of different effects may be obtained by changing the quality or proportions of wool, cotton and silk in the fabric.—l'Industrie Lainiere.

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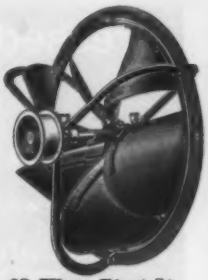

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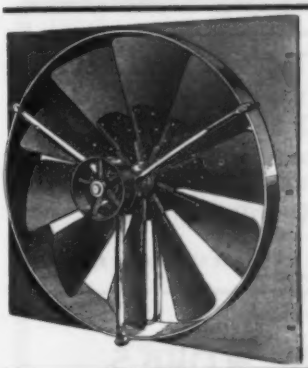

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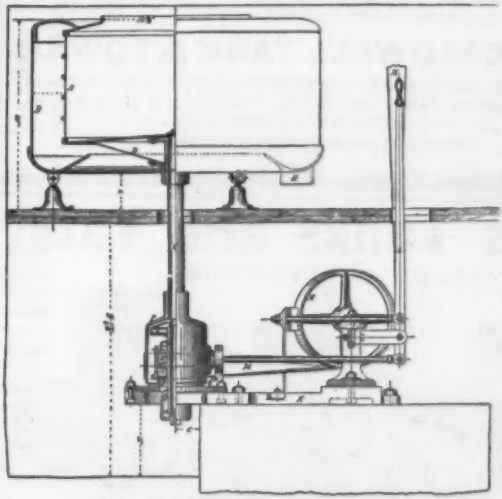

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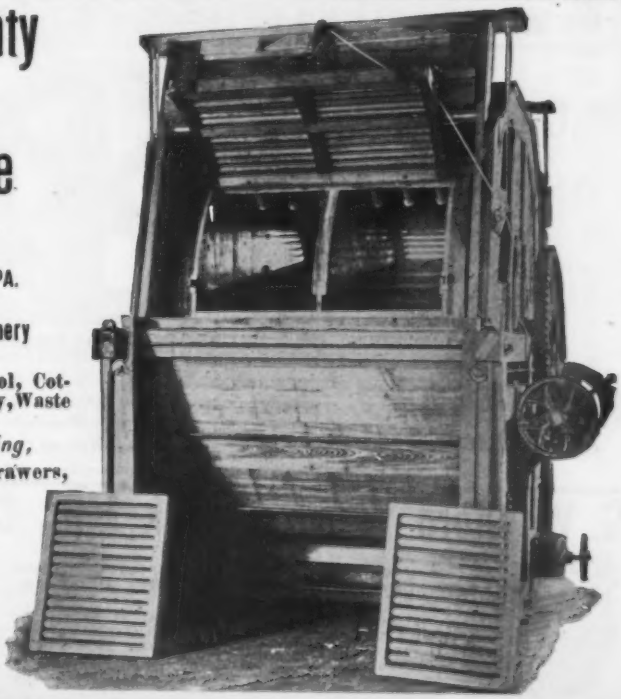

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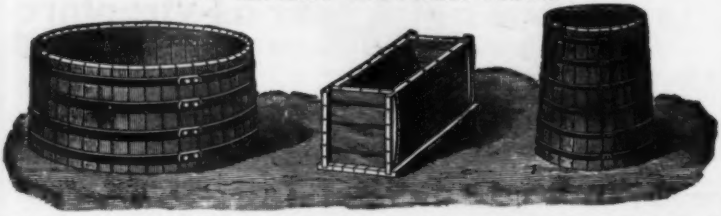

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Our Tank Factory is complete. Let us know your wants.

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WITH LOW DOWN FEED.

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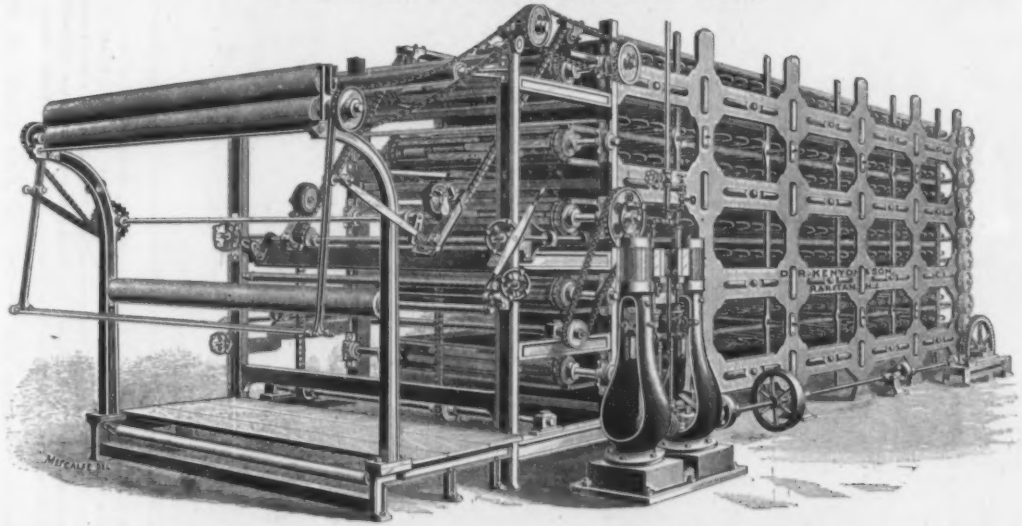

Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (double or single,) Dewing Machines, etc.

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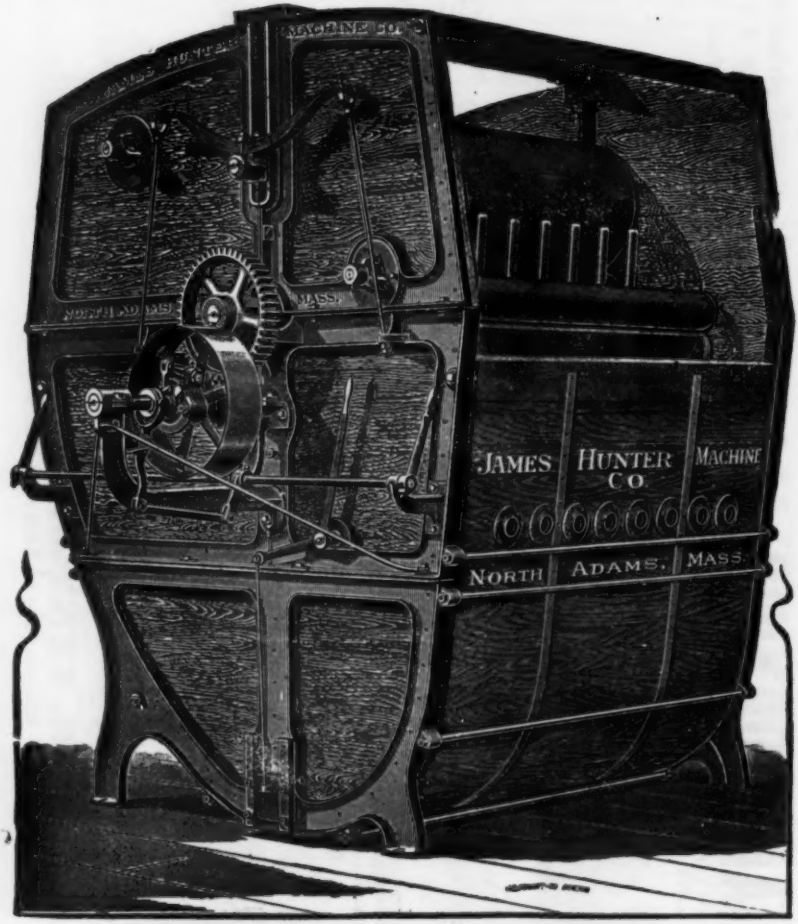
HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

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For Four, Six and Eight Strings of Goods.

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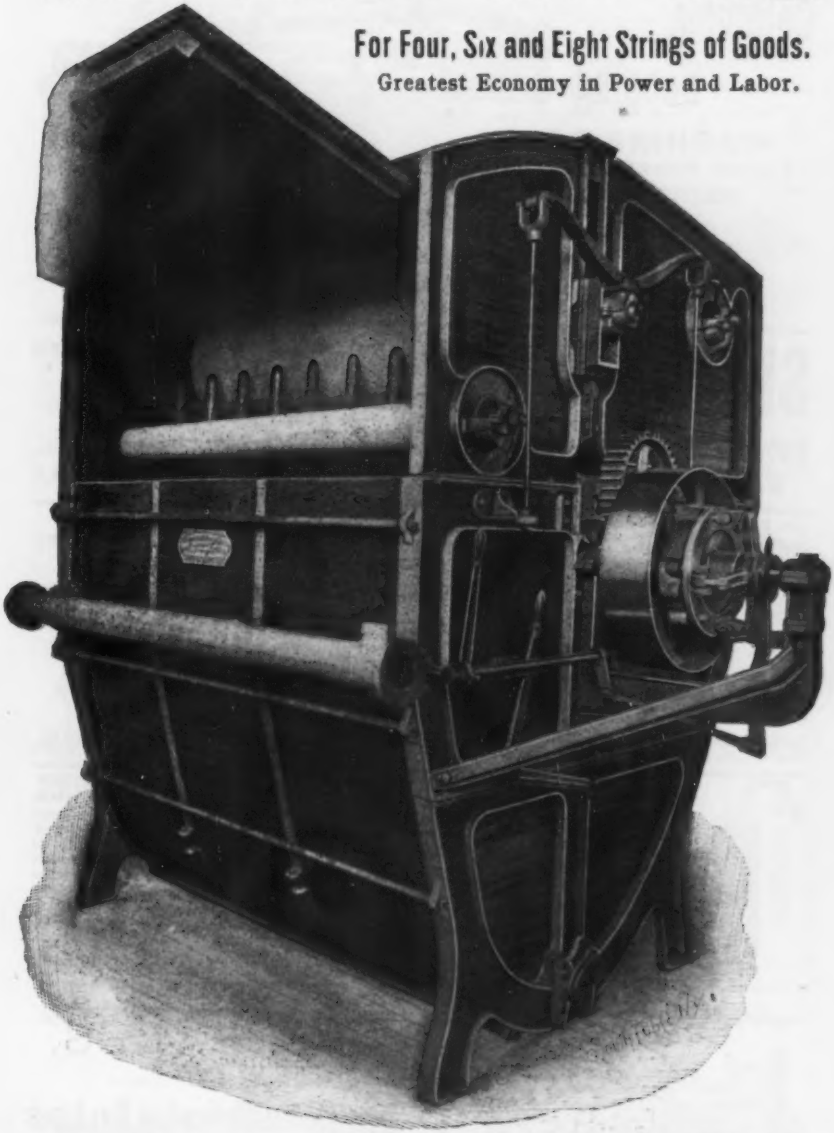

Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

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ALBERT BIRCH, Treasurer.
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Combining the latest American, French and English improvements.
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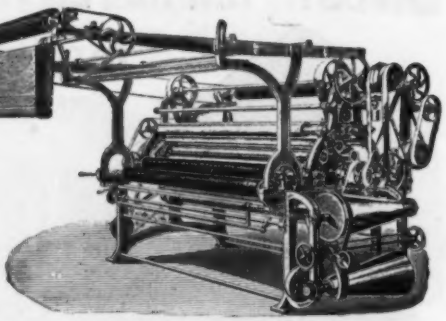

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LACINGS For Overshirts and Underwear.
Tipped and Tasseled.
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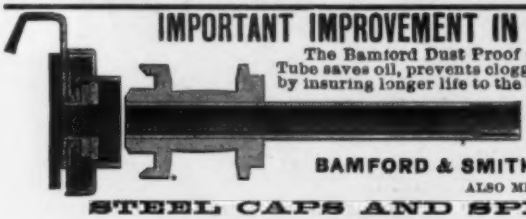

IMPORTANT IMPROVEMENT IN WORSTED SPINNING.
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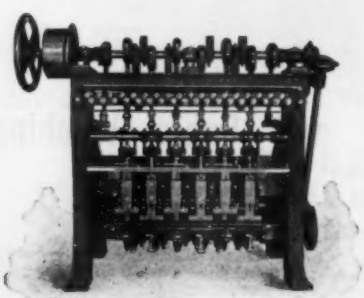

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L. F. FALES,
Manufacturer and Builder of
Multiple Needle Sewing Machines
For Sewing Carpet Linings, Horse Blankets, Wadding, etc.
These machines can be built with any required number of needles.
Special Machinery Designed and Built.
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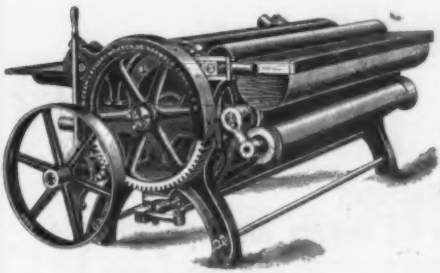

This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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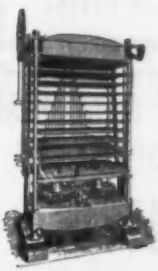

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The most reliable machine of the kind on the market.
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EFFICIENT POWER PUMPS.
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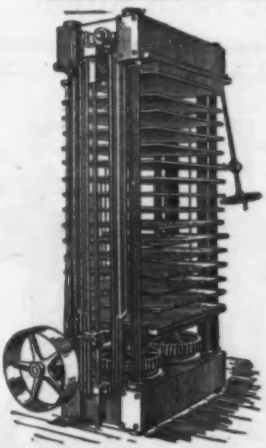
RELIANCE HOSIERY PRESS.



Hot Plate Screw Press for Hosiery Trade.
Write for Prices and Particulars.
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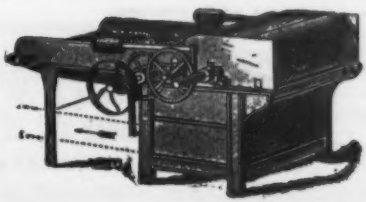

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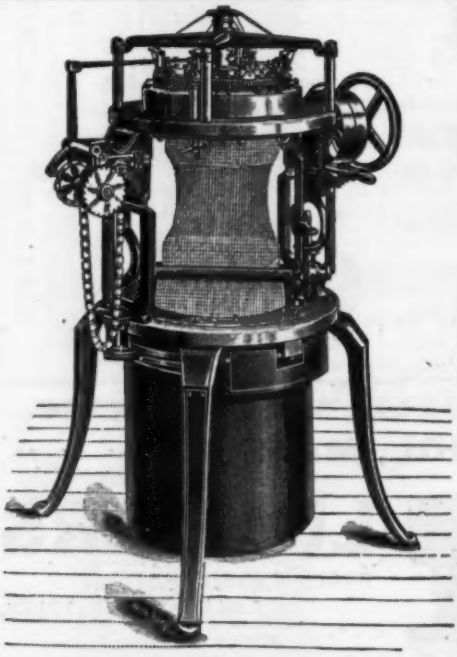

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AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

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Spring, 1902 line of

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is conceded by competent judges to be

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THEY ANNOUNCE THAT ALL INFRINGEMENTS OF THEIR

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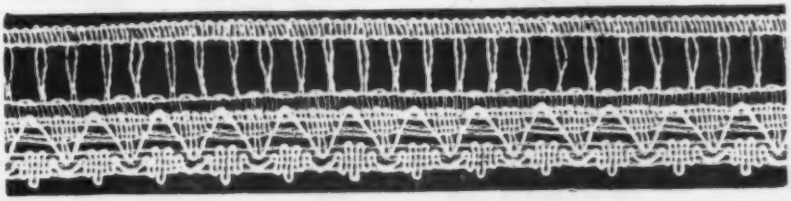

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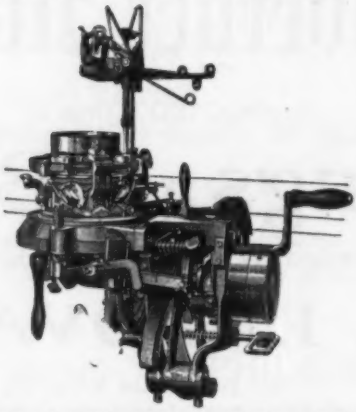
FOR SEAMLESS HOSIERY.

Hand or Power,
Open Top or Hold Down.
One-half, Three-Fourth or



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7-8 Automatic Knitting Machine. All Sizes, all Gauges.

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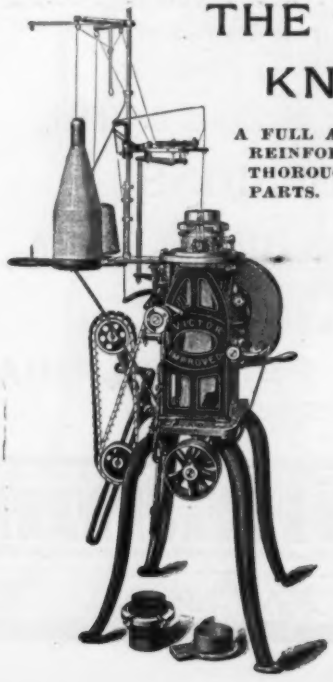

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A FULL AUTOMATIC SEAMLESS HOSIERY MACHINE. REINFORCING THREAD AUTOMATICALLY INSERTED. THOROUGHLY INTERCHANGEABLE IN ALL ITS PARTS.

MORE SIMPLY CONSTRUCTED THAN ANY MACHINE ON THE MARKET.

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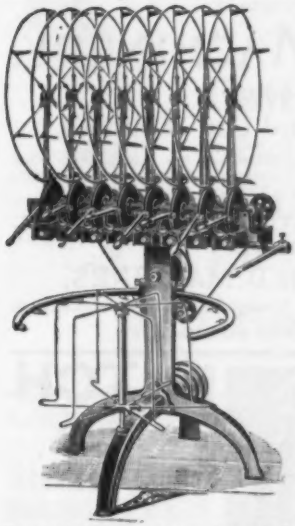
Knitting Machinery for Hosiery and Underwear

New and Second Hand.



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

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Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

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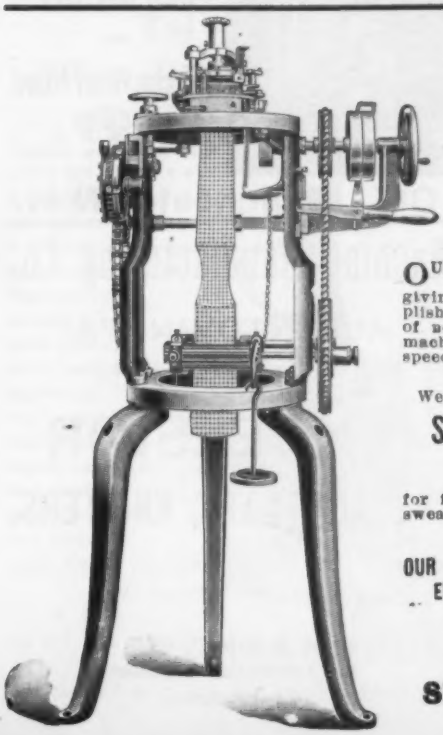

HIGH SPEED RIB KNITTING MACHINERY.

OUR latest model machinery has been designed to run at **very high speed** giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make special...

STRIPING AND DESIGNING MACHINES

for fancy golf stockings, bathing suits, sweaters, toques, toboggan caps, skirts, etc.

OUR MACHINERY ENABLES MANUFACTURERS TO "LEAD THE PROCESSION" INSTEAD OF STUMBLING ALONG WITH THE CROWD.

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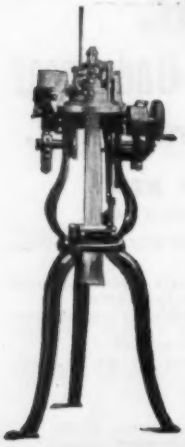

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MANUFACTURERS OF

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Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Sock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

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CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

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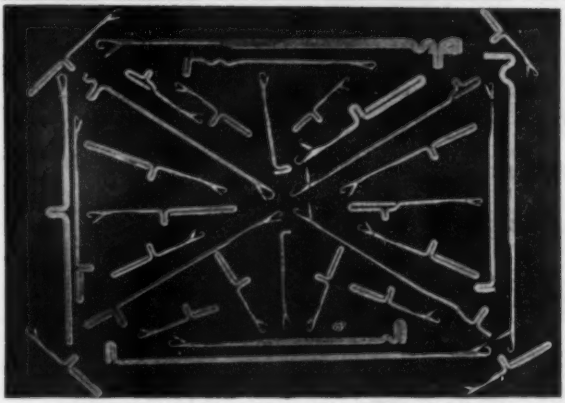

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Needles for all

Knitting Machines

OUR

SUPERIOR

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Sunken Rivet Head Needles

will save you money every day in the year.

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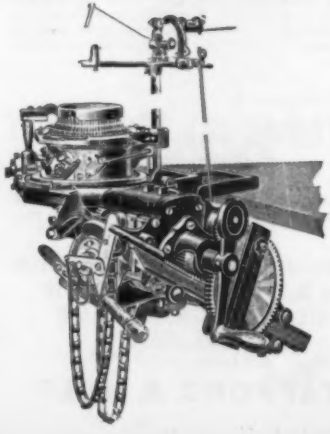

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7-8 AUTOMATIC KNITTERS,

Adapted for Ladies' Plain Hose, Men's Half Hose or footing Ribbed Hose.

Its Production is Greater than any 7-8 or full Automatic Machine now on the market.

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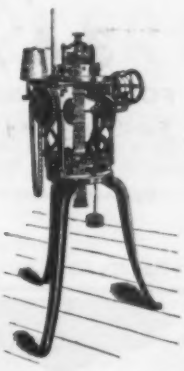
Full Automatic Seamless and Ribbed



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GAS ENGINES for city or country.
BRUSHING MACHINERY
KNITTING MACHINERY

EFFICIENT
DURABLE
LOW IN PRICE.

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CHAMPION HOSIERY STAMP.
PATENTED JANUARY 7, 1896.
The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.
Blocks for Printing Hosiery.
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THE "INVINCIBLE, C,"

FULL AUTOMATIC KNITTING MACHINE.

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For all grades and gauges of Seamless Hosiery. Fastens to Bench. Has many novel practical features. But a few hours required to teach operators to transfer ribbed tops by our method.

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FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

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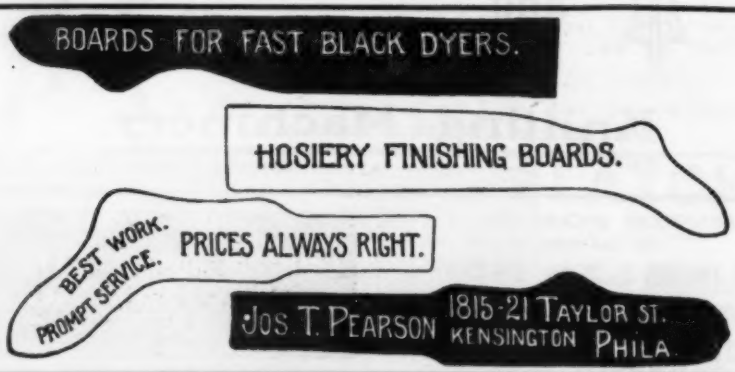
Cylinders and Dials for all size machines.



"OVERLOCK" MACHINE

(TRADE MARK.) (Pat. Apr. 5, 1892.)

Patent twice sustained by U. S. Circuit Court of Appeals.

MAKES OVER 3000 STITCHES PER MINUTE.

TRADE MARK.

For SEAMING, HEMMING AND OVEREDGING Flat, Ribbed and Fancy Underwear and Hosiery. And for OVEREDGING Lace Curtains, Ribbons, Belts, Hat Bands, Flannels, Blankets and other Fabrics.

IT MAKES

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2. The "OVERLOCK" ELASTIC CONCEALED STITCH HEM OR WELT.
3. The "OVERLOCK" ELASTIC OVER EDGE.

And in each case with one operation only, including trimming and covering of raw edges.

4. The "OVERLOCK" TAILOR-MADE SEAM. (By means of the Feller.)

Business established in 1859.

THE ELASTICITY OF ITS STITCH EQUALS THE FULL STRETCH OF THE GOODS.

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Knitting Machinery

SCOTT & WILLIAMS,

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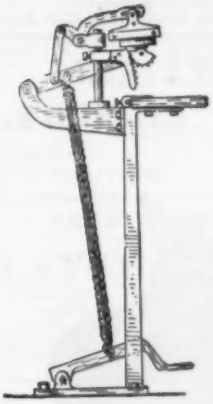
A NEW NECK MARKER!



THIS MACHINE will please the Underwear manufacturers. It is simple—a child can run it, it is so nicely balanced. The Stamping Die is self inking, and makes a clean, clear mark on thick or thin goods. When the ink pad is removed the Die makes a crease. It only weighs 100 lbs. Can be set up anywhere, and can be run as fast as any power machine.

☞ PRICES REASONABLE.

OUR VERTICAL DRYERS are steadily gaining ground, especially with mills that once have them in operation for a sample. Progressive mills will in dull times improve their machinery so as to be ready when trade starts up. Those mills are the ones that are adopting the Johnson Patent Vertical Dryers, owned and manufactured by

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ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

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CHICAGO.

L. D. SANBORN,
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NEW YORK.

THE

Merrow High Speed Crochet

and Scallop or Shell Machines,

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

For particulars and samples, address

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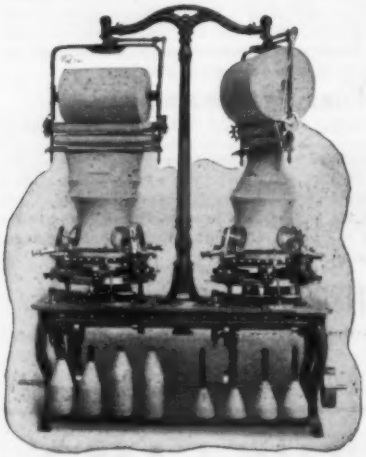

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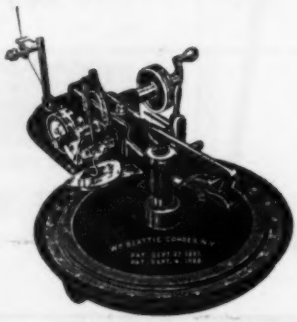

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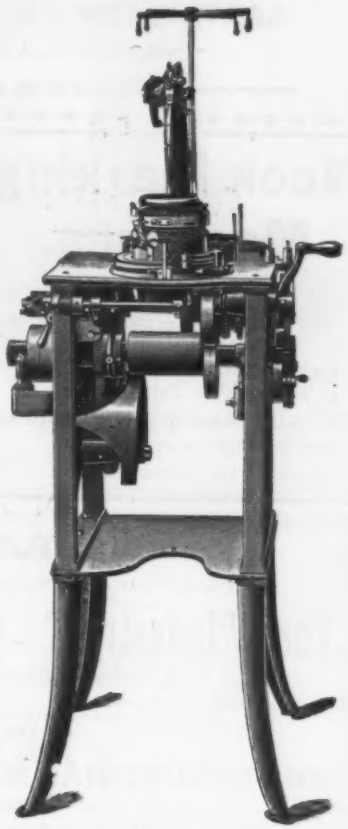

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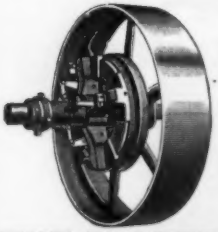

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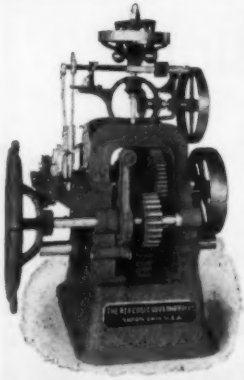

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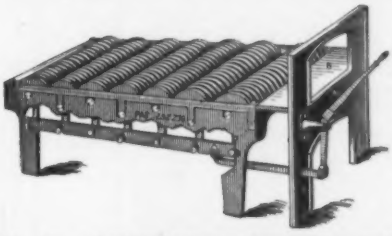

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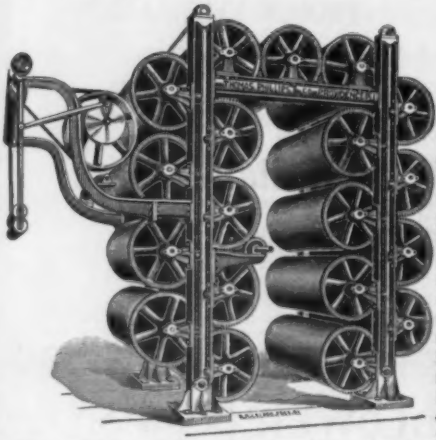

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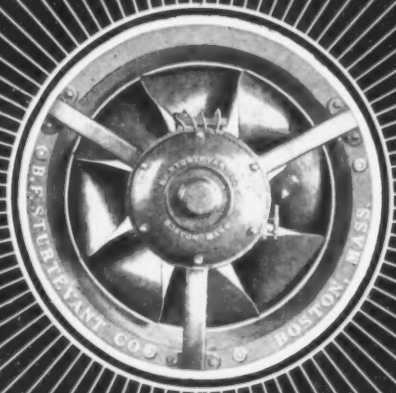

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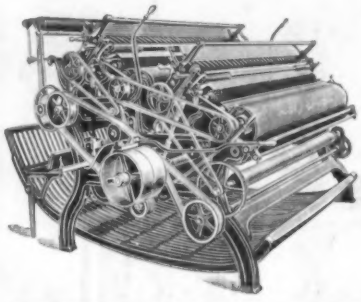

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